School of Information Technology

Artificial Inteligence and Data Analytics (ENG)

Level of Higher Education - Level I

Qualification to be Awarded – Bachelor of Computer Science

Language of Instruction – English

Number of ECTS credits - 240 ECTS

Programme Prerequisites:

Student enrolment in bachelor's program of Computer Science is carried out in accordance with the rules established by Georgian legislation and is based on the results of the Unified National Examinations. Required:

- Passing the English language and Mathematics or/and Physics components
- In English, more than 70% + 1 point is required

Individuals who have a complete general education qualification are eligible for enrolment in bachelor programs. For foreign students, Alte University has developed a special enrolment procedure that meets international standards for evaluating applicants' academic qualifications.

Programme Objectives
Build a Solid Theoretical and Mathematical Foundation Provide students with in-depth knowledge of core computer science principles—such as algorithms, data structures, and computational logic—along with a strong mathematical background necessary for analytical thinking and problem-solving in AI and data science. **Develop Practical Skills and Technical Competence** Equip students with the technical skills and hands-on experience required to design, develop, and deploy intelligent systems and data analytics solutions through coding labs, practical assignments, project-based learning, and access to industry-standard tools and platforms. **Foster Specialization and Personalized Learning Paths** Support students in exploring their specific interests within AI and data science, offering a flexible curriculum with electives and guided pathways that allow for focused specialization in areas such as machine learning, data engineering, or AI applications. **Promote Ethical, Responsible, and Collaborative Practice** Develop students' understanding of the ethical, legal, and social implications of AI and data use, while fostering collaborative work environments that enhance communication, leadership, and professional responsibility.

Prepare Graduates for Employment and Lifelong Learning
Empower students with the mindset, digital competencies, and adaptability necessary to thrive in the evolving global tech landscape. Graduates will be ready to secure roles in both public and private sectors or to pursue advanced academic studies in fields such as computer science, AI, information technology, or data science.

Structure of Educational Programme	
Mandatory courses	185 ECTS
Elective courses	55 ECTS
Supplementary programme [1]	-
Total	240 ECTS

Programme Learning Outcomes
Knowledge and understanding
Explains fundamental concepts in computer science, including programming, algorithms, data structures, and discrete mathematics, and demonstrates an understanding of their application in artificial intelligence and data analysis.
Describes mathematical and logical methods, including calculus and discrete mathematics, for analyzing and solving computational problems.
Discusses the theoretical foundations and practical applications of artificial intelligence, machine learning, and statistical modeling.
Skill
Applies programming languages, data analysis tools, and AI frameworks to design, develop, and evaluate intelligent systems and data-driven decision-making solutions.

Processes and analyzes complex datasets to identify meaningful patterns and support decision-making processes.
Identifies and solves real-world problems using computational, algorithmic, and data-driven approaches in interdisciplinary contexts.
Communicates technical concepts effectively, both orally and in writing, and collaborates within diverse teams to manage and implement AI and data analytics projects.
Responsibility and autonomy
Demonstrates ethical and socially responsible behavior in data processing, AI system development, and the use of technology across various societal contexts.
Engages in independent learning and professional development by staying current with evolving technologies and best practices in AI and data analytics.
Exhibits independence and accountability in both individual and collaborative tasks, effectively managing time and resources.

Fields of employment
Graduates of the **BA in Artificial Intelligence and Data Analytics** are prepared for high-demand roles across a wide range of industries. With skills in machine learning, data analysis, AI system development, and digital innovation, they are equipped to work in both the **private and public sectors**, including tech companies, startups, financial services, healthcare, logistics, and government agencies. **Typical roles include:** • Data Analyst / Data Scientist • Machine Learning Engineer • AI Specialist / Research Assistant • Business Intelligence Analyst • Computer Vision or NLP Developer • AI Product Manager • Data Engineer / Cloud Data Specialist

Additionally, graduates have strong foundations to pursue **advanced studies** in AI, data science, or related fields, and are well-positioned to contribute to research, innovation, or entrepreneurial ventures within the growing **tech and startup ecosystem**.

Additional information
For detailed information about the educational programme, please, visit the following link - https://alte.edu.ge/en/artificial-intelligence-and-data-analytics-eng

№	Course title	Prerequisite	Credits	Hour	Distribution of Hours							Semester											
					Contact Hours						Independent Study Hours	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
					Lecture	Practical Work	Midterm Exam	Essay/Presentation	Final Exam	Total Contact													
Courses of major study component																							
Mandatory courses of major study component (135 credits)																							
1	Introduction to Programming	N/A	5	3	1	2	3		3	48	77	x											
2	Fundamental of Computer Architecture and Technology History	N/A	5	3	1	2	3		3	48	77	x											
3	Information Technologies	N/A	5	3	1	2	3		3	48	77	x											

4	Object Oriented Programing	Introduction to Programming	5	3	1	2	3		3	48	77		x										
5	Web Development I (FrontEnd)	N/A	5	3	1	2	3		3	48	77		x										
6	Data Structures and Algorithms I	Object Oriented Programing	5	3	1	2	3		3	48	77			x									
7	Discrete Math	N/A	5	3	1	2	3		3	48	77			x									
8	Computer Organization and Architecture	Object-oriented programming, fundamentals of computer architecture and history of technology	5	3	1	2	3		3	48	77			x									
9	Web Development II (JavaScript)	Web Development I (FrontEnd)	5	3	1	2	3		3	48	77			x									
10	Data Structures and Algorithms II	Data Structures and Algorithms I	5	3	1	2	3		3	48	77				x								
11	Relational Databases	Linear Algebra, Discrete Math	5	3	1	2	3		3	48	77				x								
12	Fundamentals of systems administration (Windows)	Computer Organization and Architecture	5	3	1	2	3		3	48	77				x								
13	Fundamentals of Network Comunications	Computer Organization and Architecture	5	3	1	2	3		3	48	77				x								
14	Instruments of 3D Graphics I	Information technologies	5	3	1	2	3		3	48	77					x							
15	Theory of Computation	Linear Algebra, Discrete Math, Data Structures	5	3	1	2	3		3	48	77					x							

		and Algorithms II																					
16	NoSQL Databases	Relational Databases	5	3	1	2	3		3	48	77					x							
17	Introduction to Cybersecurity	Introduction to Programming, Data Structures and Algorithms II	5	3	1	2	3		3	48	77					x							
18	IT Career Management	N/A	5	3	1	2	3		3	48	77					x							
19	Data Analysis	Probability and Statistics, Data Structure and algorithms II	5	3	1	2	3		3	48	77						x						
20	Artificisl Intelligence	Linear Algebra, Discrete Math, Data Structures and Algorithms II	5	3	1	2	3		3	48	77					x							
21	Numerical Methods	Calculus II	5	3	1	2	3		3	48	77						x						
21	Data Engineering	Relational Databases	5	3	1	2	3		3	48	77												
22	Machine Learning	Artificial Inteligence	5	3	1	2	3		3	48	77						x						
23	Bachelor Project	Academic Writing	5	3	1	2	3		3	48	77							x					
24	Practice	all compulsory courses	5	3	1	2	3		3	48	77							x					
25	Bachelor Thesis	all compulsory courses	10	3	1	2	3		3	48	77								x				
Artificial Intelligence - Mandatory Elective (35 credits)																							

1	Game Development	Object Oriented Programming, Instruments of 3D Graphics II	5	3	1	2	3		3	48	77							x					
2	Blockchain	Introduction to Cybersecurity, Data Engineering	5	3	1	2	3		3	48	77								x				
3	Deep Learning	Machine Learning	5	3	1	2	3		3	48	77							x					
4	Computer Vision	Machine Learning	5	3	1	2	3		3	48	77								x				
5	Human - AI Interaction	Artificial Inteligence	5	3	1	2	3		3	48	77						x						
6	Instruments of 3D Graphics II	Instruments of 3D Graphics I	5	3	1	2	3		3	48	77						x						
7	Natural Language Processing	Introduction to programming, Machine Learning	5	3	1	2	3		3	48	77								x				
Data Analitics - Mandatory Elective (35 credits)																							
1	Graphic Design	N/A	5	3	1	2	3		3	48	77						x						
3	Programming Matlab	Introduction to Programming, Discrete Math, Probability and Statistic	5	3	1	2	3		3	48	77						x						
3	UI/UX Design	Graphic Design	5	3	1	2	3		3	48	77							x					
4	Cloud Computing	Introduction to Programing	5	3	1	2	3		3	48	77								x				
5	Discrete Data Processing in Matlab I	Data Analysis, Numerical Methods	5	3	1	2	3		3	48	77							x					

6	Applied Data Science	Data analysis, Machine learning	5	3	1	2	3		3	48	77							x				
7	Discrete Data Processing in Matlab II	Discrete Data Processing in Matlab I	5	3	1	2	3		3	48	77							x				
	Elective courses (0-20 credits)																						
1	Tech Entrepreneurship	N/A	5	3	1	2	3		3	48	77				x		x	x	x				
2	iOS Programming	Mobile App Development	5	3	1	2	3		3	48	77								x				
3	Software Test Automation	Fundamentals of Software Testing	5	3	1	2	3		3	48	77							x	x				
4	Drones in environmental and agricultural sciences	N/A	5	3	1	2	3		3	48	77				x		x	x	x				
5	Embedded System	Object-oriented programming	5	3	1	2	3		3	48	77				x		x	x	x				
6	Programing Language C#	Object Oriented Programming, Data Structures and Algorithms I	5	3	1	2	3		3	48	77				x		x	x	x				

7	Web Development - Django	Introduction to Programming	5	3	1	2	3		3	48	77				x		x	x	x				
8	Neural Networks	Deep Learning	5	3	1	2	3		3	48	77				x		x	x	x				
9	Management of information systems	Network Infrastructure Administration	5	3	1	2	3		3	48	77				x		x	x	x				
Free Study Component (minimum 50 -70 credits)																							
Mandatory courses of free study component (40 credits)																							
1	STEM	N/A	5	3	1	2	3		3	48	77	x											
2	Calculus I	STEM	5	3	1	2	3		3	48	77		x										
3	Physics I	STEM	5	3	1	2	3		3	48	77		x										
4	Linear Algebra	N/A	5	3	1	2	3		3	48	77		x										
5	Calculus II	Calculus I	5	3	1	2	3		3	48	77			x									
6	Physics II	Physics I	5	3	1	2	3		3	48	77			x									
7	Probability and Statistics	Calculus II	5	3	1	2	3		3	48	77				x								
8	Academic Writing	N/A	5	2	1	1	3		3	34	91	x											
Mandatory Elective (10 credits)																							
1	Georgian Language I	N/A	5	4		4	3		3	62	63	x											
2	Georgian Language II	Georgian Language I	5	4		4	3		3	62	63		x										

3	English I	N/A	5	4		4	3		3	6 2	63	x												
4	English II	English I	5	4		4	3		3	6 2	63		x											
Elective courses of free study component (0-20 credits)																								
1	Course(s) from other undergraduate programs offered at the university														**x**		**x**	**x**	**x**					
											Total Credits:	**240**												
Note: From the 6th semester, one of the two offered elective blocks must be chosen. The remaining 20 credits can be obtained by the student: from the second elective block and/or from the 10 offered elective courses and/or from the offered free elective components (including from other undergraduate programs operating at the university) subject to compliance with the relevant prerequisites. The student can also choose the desired courses of the main field of the Bachelor's program in Computer Science. In the foreign language component, students have the opportunity to choose a mandatory elective course or courses in either Georgian or English. If a student presents a certificate confirming English language proficiency at the B2 level or higher, they are allowed to take only Georgian language courses.																								