

**BAKU STATE UNIVERSITY**  
**Study program form**

<b>1. Title of the study program</b>	Mobile Application Development and Game Design
<b>2. Title of the study program in English</b>	Mobile Application Development and Game Design
<b>3. Study level</b>	Master's studies
<b>4. Study form(s)</b>	regular studies, block mode study
<b>5. Educational institution</b>	BAKU STATE UNIVERSITY
<b>6. Study program volume (ECTS credit)</b>	120
<b>7. Nominal duration of study</b>	2 years
<b>8. Study domain</b>	Information technology and systems
<b>9. Study programme group</b>	Information technology and systems
<b>10. Study field</b>	Computer science
<b>11. Study programme code in EHIS</b>	060509
<b>12. Study programme administrator</b>	Sevinj Aliyeva
<b>13. Language(s) of instruction</b>	English, Azerbaijani
<b>14. Other languages needed to achieve learning outcomes</b>	English language proficiency at C1 level of the CEFR for english group.
<b>15. First registration of the study programme</b>	Managed by central examination unit
<b>16. Conditions of admission</b>	Bachelor's Degree or equivalent qualification in Computer Engineering, Information Technology or related fields, English skills at level B2, passing the admission exams.
<b>17. Main field(s) of study and their volume (ECTS credit)</b>	Mobile Application 120 ECTS
<b>18. Minor field(s) of study, other possible specialisations and their volume (ECTS credit)</b>	-
<b>19. Study programme objectives</b>	Curriculum focuses on mobile application development topics, and becomes increasingly in-depth to allow students to develop the skills employers demand. The curriculum aims to create the conditions for the formation of a true mobile application developers and education professionals who know how to integrate educational field, ICT and design knowledge with modern information and communications

	<p>technology by using innovative educational tools that support learning and creation. The curriculum consists of the following areas:</p> <ul style="list-style-type: none"> <li>a) Fundamental courses</li> <li>b) Mobile application development courses</li> <li>c) University-wide courses</li> <li>d) Elective courses</li> </ul> <p>Curriculum consists of three integrated areas: pedagogy, creativity and technical knowledge. The curriculum is practice oriented. In ideal after graduation teams will start working as game designers and developers in related fields.</p>
<b>20. Learning outcomes of the study programme</b>	<ul style="list-style-type: none"> <li>- Ability to apply general programming knowledge in the field of developing mobile applications.</li> <li>- Understanding of the specific requirements, possibilities and challenges when developing for a mobile context.</li> <li>- Understanding of the interaction between user interface and underlying application infrastructure.</li> <li>- is familiar with educational and healthcare applications, games development</li> <li>- designing and develop mobile applications using a chosen application development framework</li> <li>- continue self-improvement through lifelong learning, to implement effective methods necessary for independent study</li> </ul>
<b>21. The title of diploma or academic degree(s)</b>	Master of Science in Information Technology (MSc)
<b>22. Documents issued at graduation</b>	Diploma and Diploma Supplement
<b>23. Structure of the study programme</b>	<p>Main field of study: Mobile Application Development</p> <p>Module 1 - Mathematics for Game and Mobile Development</p> <p>Module 2 - Programming for Game and Mobile Development</p> <p>Module 3 - Interdisciplinary Courses in Mobile Applications Development</p> <p>Module 4 - Professional Courses in Mobile Applications Development</p> <p>Module 5 - Internship</p> <p>Module 6 - Research Methods and Project Design</p>
<b>24. Options to complete the study programme</b>	All students must pass fully the module of the general courses and gamification, fundamental module, elective module.
<b>25. Graduation terms</b>	In order to graduate, the student shall complete the study programme in the given volume, which includes passing all compulsory courses and compiling and defending the Master s thesis.
<b>26. Joint curriculum</b>	no
<b>27. Additional information</b>	

## STUDY PROGRAMME MODULES, THEIR OBJECTIVES AND LEARNING OUTCOMES

<b>Number</b>	1	
<b>Title</b>	Mathematics for Game and Mobile Development	
<b>Volume</b>	15 ECTS	
<b>Objectives</b>	To establish prerequisites of theoretical knowledge and practical skills related to the algorithms, methods and models required in software development.	
<b>Learning Outcomes</b>	After successfully passing the module the student:	
	<ul style="list-style-type: none"> <li>- can design and implement AI in games</li> <li>- has comprehensive understanding of the theories and methods and applications of games and mobile apps</li> </ul>	
<b>Prerequisites</b>	- Linear Algebra, Boolean Algebra,	
	- Basic Theory of Probability	
	- Graph Theory	
<b>Assessment</b>	Grading is based on exams or assessments taken during the courses.	
<b>Courses</b>		
<b>Code</b>	<b>Title</b>	<b>Volume (ECTS)</b>
	<b>Obligatory Courses</b>	15
1.1	Machine Learning	5
1.2	Computer Vision	5
1.3	Artificial Intelligence	5

<b>Number</b>	2	
<b>Title</b>	Programming for Game and Mobile application Development	
<b>Volume</b>	20 ECTS	
<b>Objectives</b>	To acquire skills and knowledge of object oriented programming, software architecture and systems design, mobile applications and games programming methods.	
<b>Learning Outcomes</b>	After successfully passing the module the student:	
	Student has the: <ul style="list-style-type: none"> <li>- comprehensive understanding of the theories and methods and applications of game design;</li> <li>- understands the principles of game development;</li> <li>- is able to design games and to put the knowledge to a practical use;</li> <li>- is able to design conceptually;</li> </ul>	

	<ul style="list-style-type: none"> <li>- has visual creativity, originality, skills to synthesize;</li> <li>- has knowledge of visual aesthetics and the skill to describe game worlds;</li> <li>- has enough technical knowledge of programming engines;</li> <li>- is able to create mathematical models of the game concept;</li> </ul>	
<b>Prerequisites</b>	- Basic programming skills	
	- Knowledge of operating systems and network communication	
	- Knowledge of databases and SQL	
<b>Assessment</b>	Grading is based on exams or assessments taken during the courses.	
<b>Courses</b>		
<b>Code</b>	<b>Title</b>	<b>Volume (ECTS)</b>
	<b>Obligatory Courses</b>	20
2.1	Programming Languages	5
2.2	Cross-platform Development	5
2.3	Server Programming	5
2.4	<b>Elective Courses</b> [3D modelling and animation] [Advanced Java for programming] [Beginner Mobile development]	5

<b>Number</b>	3	
<b>Title</b>	Interdisciplinary	
<b>Volume</b>	15 ECTS	
<b>Objectives</b>	To learn psychological aspects of user interaction, design and communication. To develop practical skills related to design of games and user interfaces.	
<b>Learning Outcomes</b>	After successfully passing the module the student: <ul style="list-style-type: none"> <li>- is able to assess a range of technologically mediated working environments;</li> <li>- has comprehensive practical understanding of principles of the implementation of user-friendly design;</li> <li>- is able to model and implement scientific concepts related to the game interaction and design;</li> </ul>	
<b>Prerequisites</b>	-design, economics,psycology	
<b>Assessment</b>	Grading is based on exams or assessments taken during the courses.	
<b>Courses</b>		
<b>Code</b>	<b>Title</b>	<b>Volume (ECTS)</b>

	<b>Obligatory Courses</b>	15
3.1	Introduction to Mobile application Development	5
3.2	UI and UX Design	5
3.3	Psychology and team communication	5

<b>Number</b>	4.	
	Professional module	
<b>Title</b>	Professional module: Mobile Development	
<b>Volume</b>	24 ECTS	
<b>Objectives</b>	To establish knowledge and skills related to mobile platforms, mobile applications development techniques and methods, including educational and healthcare applications	
<b>Learning Outcomes</b>	Possesses knowledge in the field of design and technology and knows how to use this knowledge for design, creation and assessment of the mobile development - implement and evaluate techniques for the installation of mobile applications and delivery via various channels; - explain the principles of technologies which support media production and delivery on a variety of platforms.	
<b>Prerequisites</b>	Basic mobile platforms understanding	
	Programming Skills, Basic Data Structures and Algorithms Knowledge	
<b>Assessment</b>	Grading is based on exams or assessments taken during the courses.	

#### Courses

<b>Code</b>	<b>Title</b>	<b>Volume (ECTS)</b>
	<b>Obligatory Courses</b>	24
5.M.1	Specifics of iOS and Android Development	9
5.M.2	Neural Networks for Mobile Applications	5
5.M.3	Mobile Applications Security	5
5.M.4	AR Technologies for Mobile Applications	5

<b>Number</b>	5	
<b>Title</b>	Internship	
<b>Volume</b>	23 ECTS	

<b>Objectives</b>	To improve social and professional skills and gain experience in professional activities.	
<b>Learning Outcomes</b>	- is competent to analyze his own and others' professional activities, is able to plan further professional development and to continue self-improvement through lifelong learning, to implement effective methods necessary for independent study.	
	- is able to advise educators, game developers, game designers and IT professionals in creation of innovative fun games, serious games and educational games	
	- can continue their studies on doctoral level and/or participate in research activities, to work as a specialist, developer in the field of mobile applications creating, game development, also on an international level	
<b>Prerequisites</b>	- understanding of application development principles	
	- project management skills	
	- understanding of basic research methods	
<b>Assessment</b>	Grading is based on performance review and final report	
<b>Courses</b>		
<b>Code</b>	<b>Title</b>	<b>Volume (ECTS)</b>
	<b>Obligatory Courses</b>	23
6.1	Internship	12
6.2	Research Practice	11

<b>Number</b>	6	
<b>Title</b>	Master Thesis	
<b>Volume</b>	10 ECTS	
<b>Objectives</b>	To create an opportunity to practically apply the knowledge, skills and experience to a creative or development process. The MA thesis can be a game or mobile application or its prototype designed by the student.	
<b>Learning Outcomes</b>	After successfully passing the module the student:	
	<ul style="list-style-type: none"> <li>- is able to analyze and critically evaluate the results of their work;</li> <li>- is able to publicly defend the results of their work and to continue a discussion in the study area;</li> <li>- is able to plan, conduct and to present their thesis.</li> </ul>	
<b>Prerequisites</b>	Successfully finish all courses in other modules of the programme	
<b>Assessment</b>	Thesis will be graded by a commission of specialists at a public protection of diploma.	
<b>Courses</b>		
<b>Code</b>	<b>Title</b>	<b>Volume (ECTS)</b>

	<b>Obligatory Courses</b>	10	
7.1	Master Thesis	10	