**Curriculum**

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| **Program** | | MA program “Computer Science” |
| **Degree awarded** | | Master in Computer Science 040104 |
| **Faculty** | | Faculty of Exact and Natural Sciences |
| **Program coordinator/coordinators** | | Professor Akaki Girgvliani |
| **Length of the program (semester, ECTS)** | | Length of the program : 120 credits |
| **Language of the Program** | | Georgian |
| **Program development and renewal date of issue** | | **Accreditation Decision** №250; 26.07.2012  Board Protocol No. 7 (25.04.2011) of the meeting of Faculty of Exact and Natural Sciences, Academic Board decision №1 (11/12) 31.08.2011.  Faculty Board protocol №8 ,24.05.2012  Academic Board protocol №17 ,25.05.2012  The Physics Department protocol № 5 22.01.2014, protocol №7 16.05.2014  Faculty Board protocol №3,16.05.2014  Faculty Board protocol №12,15.06.2016  University Academic Board decision №2 (15/16)22.09.2016  Faculty Board protocol №1,11.09.2017  University Academic Board decision №1 (17/18)15.09.2017 |
| **Program prerequisites :** | | |
| * Bachelor's academic degree or the academic degree equal to it, * Passing the Unified Master’s Level Exam, * Passing the university internal exam in Computer Science, * Successfully completing the competion while enrolling in the program | | |
| **Aim of the Program** | | |
| The purpose of the program is:   * To provide a student with the knwoledge relevant to the second stage of the higher education in the field of Electronic Business; To give special education, on the basis of which it will be able to model raised mathematical problems in different fields of science and implement them through computer; * To give special computer education, as a result of which a student will be able to solve practical tasks in different areas of human activity by realising relevant algorithms; * To develop the abilities of managing high-level professional activities and independently conducting scientific research. | | |
| **Learning outcomes (the map of competences)** | | |
| **Knowledge and understanding:** | * Deep and systemic knowledge of Information Science that creates the basis for the solution of complex tasks and the development of new, original ideas within the sphere of computer science; * Deep knowledge of the aspects of interrelationships between the development of informatics and its fields; * Knowledge of the process of teaching and learning informatics; | |
| **Applying Knowledge:** | * Ability to analyze the complex and difficult tasks of algorithms on the computer and analyze the obtained results; * Ability to use programming methods to solve various theoretical and practical tasks; * Ability to get acquinted with scientific literature and the latest researches independently; | |
| **Making judgement:** | * Ability to understand and abstract the difficult problems; * Ability to formulate grounded conclusions based on critical analysis of complex and incomplete information (including recent researches). | |
| **Communication skills:** | * Ability to demonstrate clearly the results of conclusions, arguments and researches to specialists in Georgian and foreign languages both in oral and written forms; * Ability to use modern informative and communicative technologies from different sources for the purpose of finding, processing and presenting the information; | |
| **Learning skills:** | * Ability to study and independently manage classical and recent achievements of research; * Time management skills. | |
| **Values:** | * Accepting academic honesty; * Ability to evaluate his/her professional values and others' attitudes. | |
| **Teaching methods:** | | |
| The classical methods of teaching are: inductive, deductive, analysis and synthesis, verbal explanatory, writing, heuristic, demonstrative; Case-techniques: Situational analysis, situational tasks and exercises, case-study analysis; Action-oriented teaching and more. | | |
| **Structure of the program:** | | |
| Compulsory courses of university-10 credits; Compulsory courses of specialty-60 credits; Optional courses of specialty-20 credits; Master’s Thesis-30 credits;Master Thesis finishes with the defense of Master's Dissertation conducted in accordance with ATSU Academic Board Decree No. 112 10.06.2011 | | |
| **Assessment System:** | | |
| The final assessments are made on the basis of summarizing the evaluation of intermediate and the final exam.  Maximum assessment of the course is equal to 100 points.The student has the right to take the final exam, if his/her minimum competency is 18 points. A student with less than 15 points on the final examination, despite its achievements in other components of the assessment, can be evaluated by FX (failed).  Evaluation System includes:  **A. Five Forms of Positive Assessment:**  (A) Excellent – 91-100 points  (B) very good – 81-90 points  (C) good – 71-80 points  (D) satisfactory – 61-70 points  (E) sufficient – 51-60 points  **B. Two Forms of Negative Assessment:**  B.(FX) (Administrative Fail in Course for Grade/could not pass)– A student gets 41-50 points from maximum evaluation which means that s/he is required to work more for passing the exam, and that s/he is entitled to take a makeup exam only once through personal study;  (F) (Academic Fail) – A student gets 0-40 points and less from maximum evaluation which means that the work done by him/her is not sufficient and s/he has to retake the course.According to educational component of educational program, in case of adoption of FX, a makeup exam will be appointed no less than 5 calendar days after the conclusion of the final exam results. The number of points received in the makeup final exam, is not added to the final assessment received by the student. According to the assessment 0-50 points received from the makeup final exam, in the final evaluation of the educational component, the student will be evaluated the F-0 score.  Concrete criteria of assessments are defined into the corresponding syllabus of an academic course. | | |
| **Employment opportunities:** | | |
| Master’s academic degree in Computer Science is an essential prerequisite for employment in all areas which require deep and systematic knowledge of informatics, the ability of programming methods and logical thinking skills.Main potential working areas of graduates are: : Education (Public school, college, higher education institutions), science (Scientific Research Institutions ), business (Bank, Distribution Service, Communications), Administrative activities (City Hall, municipal offices, revenue service).  Successful graduates can continue to pursue third level higher education in Doctoral programs as in Computer Science as well as in many other interdisciplinary programs(Mathematics, Economic Informatics, Information Technology, etc.). | | |
| **Supportive resources** | | |
| The study process is carried out in university auditors, the university has university and faculty libraries. The department has a library, technical equipment, seven computer classes with 100 computers which are provided with relevant programs for educational programs; see the attached document 2 on Information about Human Resources | | |
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**Attached document 1**

**Study Schedule of 2017-2019 years**

**Program Name** “Computer Science “

**Degree Awarded :** MA in Computer Science

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| № | Course | Contact hours in week  ს/კ | Credits | The number of hours | | | | Lecture/Practical/Laboratory/Seminar | Semesters | | | | preconditions |
| Total | Contact | | Independent | I | II | III | IV |
| Class hours | Midterm, Final exams |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 1 | **Compulsory Courses of University (10 ECTS)** | | | | | | | | | | | | |
| 1.1 | Field related foreign language 1 | 3 | 5 | 125 | 45 | 3 | 77 | 0/3/0/0 | 5 |  |  |  | - |
| 1.2 | Field related foreign language 2 | 3 | 5 | 125 | 45 | 3 | 77 | 0/3/0/0 |  | 5 |  |  | 1.1 |
| **Total:** | |  | **10** | **250** | **90** | **6** | **154** |  | | | | | |
| 2 | **Compulsory Courses of Specialty (60ECTS)** | | | | | | | | | | | | |
| 2.1 | Data structures | 3 | 5 | 125 | 45 | 3 | 77 | 1/1/1/0 | 5 |  |  |  | - |
| 2.2 | Fundamental Algorithms 1 | 3 | 5 | 125 | 45 | 3 | 77 | 1/1/1/0 |  | 5 |  |  | 2.1 |
| 2.3 | Fundamental Algorithms 2 | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 |  |  | 5 |  | 2.2 |
| 2.4 | Object-oriented programming 1 | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 | 5 |  |  |  | - |
| 2.5 | Object-oriented programming 2 | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 |  | 5 |  |  | 2.4 |
| 2.6 | Web programming 1 (JavaScript) | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 | 5 |  |  |  | - |
| 2.7 | Web programming 2 (PHP) | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 |  | 5 |  |  | 2.6 |
| 2.8 | Databases | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 | 5 |  |  |  | - |
| 2.9 | Software Engineering | 3 | 5 | 125 | 45 | 3 | 77 | 1/2/0/0 |  |  | 5 |  | 2.5 |
| 2.10 | Basics of scientific research | 3 | 5 | 125 | 45 | 3 | 77 | 2/1/0/0 |  | 5 |  |  | - |
| 2.11 | Artificial Intelligence Systems | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 |  |  | 5 |  | 2.5 |
| 2.12 | Seminar in Computer Science | 3 | 5 | 125 | 45 | 3 | 77 | 0/0/0/3 |  |  | 5 |  | - |
| **Total:** | |  | **60** | **1500** |  | **33** |  |  | | | | | |
| 3 | **Optional Courses of Specialty (20 ECTS)** | | | | | | | | | | | | |
| 3.1 | Operating systems | 3 | 5 | 125 | 45 | 3 | 77 | 2/1/0/0 | 5 |  |  |  | - |
| 3.2 | High school Pedagogy | 3 | 5 | 125 | 45 | 3 | 77 | 2/1/0/0 | 5 |  |  |  | - |
| 3.3 | Information theory | 3 | 5 | 125 | 45 | 3 | 77 | 2/1/0/0 |  | 5 |  |  | - |
| 3.4 | Decision-making intelligent systems | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 |  |  | 5 |  | - |
| 3.5 | Mathematical modeling | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 |  | 5 |  |  | - |
| 3.6 | VBA - programming in appendices | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 |  |  | 5 |  | - |
| 3.7 | Systems security and protection | 3 | 5 | 125 | 45 | 3 | 77 | 2/0/1/0 |  |  | 5 |  | - |
| 3.8 | Modeling of Geoinformation systems | 3 | 5 | 125 | 45 | 3 | 77 | 1/0/2/0 |  |  | 5 |  | - |
| **Total:** | | **-** | **20** | **500** |  |  |  |  | 5 | 5 | 10 |  |  |
| 4. | Master’s Thesis |  | **30** | **750** |  | | | |  |  |  | **30** | - |
| **120** | **3000** |  |  |  |  | - |
| **Total:** | |  |  |  |  | | | | | |
|  |  |  |  |  |  |  |  |  | **30** | **30** | **30** | **30** |  |