Bachelor’s Educational Program

**Computer Science**

Tbilisi

2021 year

**20**

**Study Plan**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **Course / Module / Internship / Research Component** | **Status** | **Credit number** | **Distribution of credits per courses and semesters** | | | | | | | | | |  |  | | **Distribution of hours** | | | | | | **Number of contact hours per week** |
| **I s.y.** | | **II s.y.** | | **III s.y.** | | **IV s.y.** | | | |  | **Contact hours** | | | | | | **Independent work** | **Total number of hours** |
| **I Semester** | **II Semester** | **III Semester** | **IV Semester** | **V Semester** | **VI Semester** | **VII Semester** | | **VIII Semester** | | **Lecture / Consultation** | | **Seminar / Group Work / Laboratory Work / Practical work** | | **Midterm exam(s)** | **Final exam** | **Total number of contact hours** |
| 2 | Calculus 1 | Obligatory | 6 | 6 |  |  |  |  |  | |  | |  | 15 | | 28 | | 2 | 2 | 47 | 103 | 150 | 3 |
| **3** | Computer Architecture | Obligatory | 5 | 5 |  |  |  |  |  | |  | |  | 43 | | - | | 2 | 2 | 47 | 78 | 125 | 3 |
| 4 | Principles of Programing | Obligatory | 5 | 5 |  |  |  |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 5 | Aspects of Computer Science and Technology | Obligatory | 5 | 5 |  |  |  |  |  | |  | |  | 30 | | 13 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 6 | Physics | Obligatory | 5 |  | 5 |  |  |  |  | |  | |  | 14 | | 29 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 7 | Calculus 2 | Obligatory | 6 |  | 6 |  |  |  |  | |  | |  | 15 | | 28 | | 2 | 2 | 47 | 103 | 150 | 3 |
| 8 | Databases | Obligatory | 5 |  | 5 |  |  |  |  | |  | |  | 26 | | 17 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 9 | Object Oriented Programming | Obligatory | 5 |  | 5 |  |  |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 10 | Linear Algebra | Obligatory | 5 |  |  | 5 |  |  |  | |  | |  | 31 | | 12 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 11 | Algorithms and Data Structures 1 | Obligatory | 6 |  |  | 6 |  |  |  | |  | |  | 29 | | 14 | | 2 | 2 | 47 | 103 | 150 | 3 |
| 12 | Software Development | Obligatory | 5 |  |  | 5 |  |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 13 | Discrete Mathematics | Obligatory | 6 |  |  |  | 6 |  |  | |  | |  | 29 | | 14 | | 2 | 2 | 47 | 103 | 150 | 3 |
| 14 | Professional English | Obligatory | 4 |  |  |  | 4 |  |  | |  | |  | 31 | | 12 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 15 | Operating Systems | Obligatory | 5 |  |  |  | 5 |  |  | |  | |  | 14 | | 29 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 16 | Algorithms and Data Structures 2 | Obligatory | 6 |  |  |  | 6 |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 103 | 150 | 3 |
| 17 | Academic Writing | Obligatory | 5 |  |  |  |  | 5 |  | |  | |  | 15 | | 28 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 18 | Theoretical Foundations of Computer Science | Obligatory | 6 |  |  |  |  | 6 |  | |  | |  | 29 | | 14 | | 2 | 2 | 47 | 103 | 150 | 3 |
| 19 | Probability and Statistics | Obligatory | 6 |  |  |  |  | 6 |  | |  | |  | 29 | | 14 | | 2 | 2 | 47 | 103 | 150 | 3 |
| 20 | Computer Networks | Obligatory | 4 |  |  |  |  | 4 |  | |  | |  | 31 | | 12 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 21 | Software Engineering | Obligatory | 5 |  |  |  |  |  | 5 | |  | |  | 30 | | 13 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 22 | Artificial Intelligence | Obligatory | 5 |  |  |  |  |  | 5 | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 23 | Computer Systems Security | Obligatory | 5 |  |  |  |  |  | 5 | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 24 | Machine Learning | Obligatory | 6 |  |  |  |  |  |  | | 6 | |  | 29 | | 14 | | 2 | 2 | 47 | 103 | 150 | 3 |
| 25 | Programming Paradigms | Obligatory | 5 |  |  |  |  |  |  | | 5 | |  | 29 | | 14 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 26 | Internship | Obligatory | 7 |  |  |  |  |  |  | | 7 | |  | - | | 139 | | 2 | 2 | 143 | 32 | 175 | - |
| 27 | Seminar | Obligatory | 4 |  |  |  |  |  |  | | 4 | |  | 14 | | - | | 1 | - | 15 | 85 | 100 | 1 |
| 28 | Bachelor's Thesis | Obligatory | 10 |  |  |  |  |  |  | |  | | 10 | - | | 28 | | 1 | 1 | 30 | 220 | 250 | - |
| 29 | Computer Skills | Elective | 4 | 4 |  |  |  |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 30 | Web Programming 1 | Elective | 4 | 4 |  |  |  |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 31 | Web Programming 2 | Elective | 4 |  | 4 |  |  |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 32 | Information Technology Project Management | Elective | 4 |  | 4 |  |  |  |  | |  | |  | 14 | | 29 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 33 | Geographic Information Systems | Elective | 4 |  | 4 |  |  |  |  | |  | |  | 15 | | 28 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 34 | Front End Development using Angular | Elective | 4 |  |  | 4 |  |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 35 | 3D Graphics in Blender 1 | Elective | 4 |  |  | 4 |  |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 36 | Administration of databases | Elective | 4 |  |  | 4 |  |  |  | |  | |  | 14 | | 29 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 37 | Backend programming | Elective | 4 |  |  |  | 4 |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 38 | Designing and building mobile applications | Elective | 4 |  |  |  | 4 |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 39 | 3D Graphics in Blender 2 | Elective | 4 |  |  |  | 4 |  |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 40 | Computer game programming | Elective | 4 |  |  |  |  | 4 |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 41 | Web Applications Programming | Elective | 4 |  |  |  |  | 4 |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 53 | 100 | 3 |
| 42 | Applied Cryptography | Elective | 4 |  |  |  |  | 4 |  | |  | |  | 14 | | 30 | | 1 | 2 | 47 | 53 | 100 | 3 |
| 43 | Differential equations | Elective | 5 |  |  |  |  | 5 |  | |  | |  | 15 | | 28 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 44 | Virtualization technology | Elective | 5 |  |  |  |  |  | 5 | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 45 | Statistical Methods in Bioinformatics | Elective | 5 |  |  |  |  |  | 5 | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 46 | Natural language processing | Elective | 5 |  |  |  |  |  | 5 | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 47 | Programming on Python | Elective | 5 |  |  |  |  |  |  | | 5 | |  | 29 | | 14 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 48 | Basics of Neural Networks | Elective | 5 |  |  |  |  |  |  | | 5 | |  | 15 | | 28 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 49 | Essentials of Ethical Hacking and Network Security | Elective | 5 |  |  |  |  |  |  | | 5 | |  | 14 | | 29 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 50 | Programming on Matlab | Elective | 5 |  |  |  |  |  |  | |  | | 5 | 29 | | 14 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 51 | Wireless Communication | Elective | 5 |  |  |  |  |  |  | |  | | 5 | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 52 | Cloud computing | Elective | 5 |  |  |  |  |  |  | |  | | 5 | 32 | | 11 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 53 | Arduino Programming | Elective | 5 |  |  |  |  |  |  | |  | | 5 | 10 | | 34 | | 1 | 2 | 47 | 78 | 125 | 3 |
| 54 | Computer vision | Elective | 5 |  |  |  |  |  |  | |  | | 5 | 29 | | 14 | | 2 | 2 | 47 | 78 | 125 | 3 |
| 55 | Advanced Computer Architecture | Elective | 5 |  |  |  |  | 5 |  | |  | |  | 28 | | 15 | | 2 | 2 | 47 | 78 | 125 | 3 |
|  | Free Curses  Foreign Language  (English, Russian, German, French,  Spanish, Turkish) | Elective | 43  (15) | 5  5 | 5  5 | 6  5 | 5 | 4 | 5 | | 3 | | 10 | - | | -- | | - | - | - | - | 1075 | - |
| **Total number** | |  | **240** | **30** | **30** | **30** | **30** | **30** | **30** | | **30** | | **30** | **919** | | **768** | | **73** | **73** | **1833** | **3092** | **6000** | **106** |