**University of Computer Studies**

**Bachelor of Computer Science (B.C.Sc.)**

**5 years Credit System Curriculum**

**First Year (B.C.Sc./B.C.Tech.) (Semester I)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject Code** | **Course Description** | **Subject Type** | **Lecture**  **(ACU)** | **Practical/Lab/ Tutorial (ACU)** | **ACU** |
| 1. | M-1101 | Myanmar Language | Core | 2 | 1 | 3 |
| 2. | E-1101 | Proficiency English I | Core | 2 | 1 | 3 |
| 3. | P-1101 | Physics | Skill & Knowledge | 2 | 1 | 3 |
| 4. | CST-1111 | Principle of Information Technology | Core | 2 | 1 | 3 |
| 5. | CST-1142 | Calculus | Skill & Knowledge | 2 | 1 | 3 |
| 6. | CST(SK)-1103 | **Supporting Skills**  - Microsoft Office 365  - Basic Data Processing | Supporting Skills | 2 | 1 | 3 |
| **Total Credit Units** | | | | | | 18 |

**First Year (B.C.Sc./B.C.Tech.) (Semester II)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject Code** | **Course Description** | **Subject**  **Type** | **Lecture**  **(ACU)** | **Practical/Lab/ Tutorial (ACU)** | **ACU** |
| 1. | SS-1201 | Myanmar Language | Core-Foundation | 2 | 1 | 3 |
| 2. | E-1201 | Proficiency English II | Core-Foundation | 2 | 1 | 3 |
| 3. | P-1201 | Physics | Skill & Knowledge | 2 | 1 | 3 |
| 4. | CST-1211 | Programming Logic & Design (Programming in C++) | Core | 2 | 1 | 3 |
| 5. | CST-1242 | Discrete | Skill & Knowledge | 2 | 1 | 3 |
| 6. | CST(SK)-1203 | **Supporting Skills**  - Advanced Office 365  - Digital Citizenship and Smart Living Society | Supporting Skills | 2 | 1 | 3 |
| **Total Credit Units** | | | | | | 18 |

**Second Year (B.C.Sc.) (Semester III)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject Code** | **Course**  **Description** | **Subject**  **Type** | **Prerequi -site** | **Lecture**  **(ACU)** | **Practical/ Lab/ Tutorial (ACU)** | **ACU** |
| 1. | E-2101 | Proficiency English III | Core-Foundation |  | 2 | 1 | 3 |
| 2. | CST-2111 | Programming Language (Java) | Core | CST-1211 | 2 | 1 | 3 |
| 3. | CST-2142 | Calculus II | Skill & Knowledge | CST-1142 | 2 | 1 | 3 |
| 4. | CST-2133 | Digital Logic Design | Core | CST-1111 | 2 | 1 | 3 |
| 5. | CST-2124 | Database Management System | Core |  | 2 | 1 | 3 |
| 6. | CST(SK)-2155 | **Skill & Knowledge I**  Web Platform- based Development (HTML5 + CSS) | Skill & Knowledge |  | 2 | 1 | 3 |
| **Total Credit Units** | | | | | | | 18 |

**Second Year (B.C.Sc.) (Semester IV)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject Code** | **Course Description** | **Subject**  **Type** | **Prerequisite** | **Lecture**  **(ACU)** | **Practical/Lab/ Tutorial(ACU)** | **ACU** |
| 1. | E-2201 | Proficiency English IV | Core |  | 2 | 1 | 3 |
| 2. | CST-2211 | Data Structure and Algorithm | Core |  | 2 | 1 | 3 |
| 3. | CST-2242 | Linear Algebra | Core |  | 2 | 1 | 3 |
| 4. | CST-2223 | Software Engineering | Core |  | 2 | 1 | 3 |
| 5. | CS-2254 | Web Development (Java Script) | Core |  | 1 | 2 | 3 |
| 6. | CST(SS)-2205 | **Supporting Skills**  - Arduino Fundamentals  - Advanced Java Programming (J2EE) | Supporting Skills (Elective) |  | 1 | 2 | 3 |
| **Total Credit Units** | | | | | | | 18 |

**Third Year (B.C.Sc.) (Semester V)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject**  **Code** | **Course Description** | **Subject Types** | **Pre-**  **requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto..**  **(Credit)** | **ACU** |
| 1 | CST-3131 | Computer Architecture and Organization- I | Core | CST-2133 | 2 | 1 | 3 |
| 2 | CST-3142 | Differential Equations and Numerical Analysis | Core | CST-2142 | 2 | 1 | 3 |
| 3 | CST-3113 | Artificial Intelligence | Core | - | 2 | 1 | 3 |
| 4 | CS-3124 | Software Analysis and Design | Core | CST-2223 | 2 | 1 | 3 |
| 5 | CS-3125 | Database System Structure | Core | CST-2124 | 2 | 1 | 3 |
| 6 | CS-3156  (SK) | **Skills & Knowledge II**  - Web Development PHP | Skills & Knowledge | - | - | 2 | 2 |
| 7 | CST-3157  (SK) | **Skills & Knowledge III**  - Financial management & Accounting | Skills & Knowledge | - | 1 | - | 1 |
| **Total Credit Units** | | | | | | | **18** |

**Third Year (B.C.Sc.) (Semester VI)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject**  **Code** | **Course Description** | **Subject Types** | **Pre-requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto..**  **(Credit)** | **ACU** |
| 1 | CST-3211 | Operating Systems | Core | - | 2 | 1 | 3 |
| 2 | CST-3242 | Probability and Statistics | Core | - | 2 | 1 | 3 |
| 3 | CST-3213 | Professional Ethics | Core | - | 1 | 1 | 2 |
| 4 | CS-3224 | Software Quality Assurance and Testing | Core | CST-2223,  CS-3124 | 2 | 1 | 3 |
| 5 | CST-3235 | Computer Networks I | Core | - | 2 | 1 | 3 |
| 6 | CST(SS)-3256 | Human Computer Interaction | Core | - | 2 | - | 2 |
| 7 | CST(SS)-3257 | **Supporting Skills**  - Applied Database and Application (ADO.Net, C#) | Supporting Skills | - | - | 2 | 2 |
| **Total Credit Units** | | | | | | | **18** |

**Fourth Year (B.C.Sc.) (Semester VII)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject**  **Code** | **Course Description** | **Subject Types** | **Pre- requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto..**  **(Credit)** | **ACU** |
| 1 | Eng-4101 | Professional English: English for media | Core | - | 2 | 1 | 3 |
| 2 | CST-4111 | Analysis of Algorithms | Core | CST-2211 | 2 | 1 | 3 |
| 3 | CS-4142 | Operations Research | Core | - | 2 | 1 | 3 |
| 4 | CS-4113 | Computer Vision | Core | CST-1211 | 2 | 1 | 3 |
| 5 | CS-4124 | Information Assurance and Security | Core | - | 2 | 1 | 3 |
| 6 | CST-4125 | Software Project Management | Core | - | 2 | 1 | 3 |
| **Total Credit Units** | | | | | | | **18** |

**Fourth Year (B.C.Sc.) (Semester VIII)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject**  **Code** | **Course Description** | **Subject Types** | **Pre- requisite** | **Lecture**  **(Credit)** | **Pract/**  **Lab/Tut**  **(Credit)** | **ACU** |
| 1 | CST-4211 | Parallel and Distributed Computing   * Distributed System * Introduction to Parallel AA | Core | CST-3211+  CST-4111 | 2 | 1 | 3 |
| 2 | CST-4242 | Modeling and Simulation | Core | CST-3242 | 2 | 1 | 3 |
| 3 | CS-4223 | Object-Oriented Design and Development | Core | CS-3124 | 2 | 1 | 3 |
| 4 | CS-4214 | Elective I-A  **Advanced Artificial Intelligence**   * Knowledge Representation and Management * Machine Learning Algorithms | Technical Electives  (Choose 3 subjects) | CST-3113 | 1  1 | 1  - | 2  1 |
| 5 | CS-4225 | Elective II-A  **Advanced Database**   * Advanced Database System | CS-3125 | 2 | 1 | 3 |
| 6 | CS-4216 | Elective III-A  **Net-Centric Computing**   * Cloud Computing * Real Time and Embedded OS | - | 1  1 | 1  - | 2  1 |
| 7 | CST-4257 | Elective IV-A  **Business Information System**   * Digital Business and e-Commence | CST-3157 | 2 | 1 | 3 |
| **Total Credit Units** | | | | | | | 18 |

**Fifth Year (B.C.Sc.) (Semester IX)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject**  **Code** | **Course Description** | **Subject Types** | **Pre- requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto..**  **(Credit)** | **Credit**  **Units** |
| 1 | Eng-5101 | Communication Skills | Core | - | 1 | 1 | 2 |
| 2 | CS-5121 | Cyber Security and Digital Forensics | Core | - | 2 | 1 | 3 |
| 3 | CS-5112 | Elective I-B  **Advanced Artificial Intelligence**   * Natural Language Processing | Technical Electives  (Choose 3 subjects) | I-A | 2 | 1 | 3 |
| 4 | CST-5123A  CST-5123B | Elective II-B  **Data Science (Choose one)**   * Data Science Fundamental * Data Analytic and Mining | II-A | 2 | 1 | 3 |
| 5 | CS-5114 | Elective III-B  **Strategies of Emerging Technology**   * Network and Cloud Security * Virtualization Technology * Internet of Things * Blockchain Technology | III-A | 2 | 1 | 3 |
| 6 | CST-5155 | Elective IV-B  **Business Information System**   * Enterprise Resource Planning (ERP) | IV-A | 2 | 1 | 3 |
| **Total Credit Units** | | | | | | | 14 |

**Fifth Year (B.C.Sc.) (Semester X)**

**Internship - 6 Credits**

**Total Credits – Semester I to X = 164 Credits**

**University of Computer Studies**

**Bachelor of Computer Technology (B.C.Tech.)**

**5 Year Credit System Curriculum**

**First Year (B.C.Sc./B.C.Tech.) (Semester I)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject Code** | **Course Description** | **Subject Type** | **Lecture**  **(ACU)** | **Practical/Lab/ Tutorial (ACU)** | **ACU** |
| 1. | M-1101 | Myanmar Language | Core | 2 | 1 | 3 |
| 2. | E-1101 | Proficiency English I | Core | 2 | 1 | 3 |
| 3. | P-1101 | Physics | Skill & Knowledge | 2 | 1 | 3 |
| 4. | CST-1111 | Principle of Information Technology | Core | 2 | 1 | 3 |
| 5. | CST-1142 | Calculus | Skill & Knowledge | 2 | 1 | 3 |
| 6. | CST(SK)-1103 | **Supporting Skills**  - Microsoft Office 365  - Basic Data Processing | Supporting Skills | 2 | 1 | 3 |
| **Total Credit Units** | | | | | | 18 |

**First Year (B.C.Sc./B.C.Tech.) (Semester II)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject Code** | **Course Description** | **Subject**  **Type** | **Lecture**  **(ACU)** | **Practical/Lab/ Tutorial (ACU)** | **ACU** |
| 1. | SS-1201 | Myanmar Language | Core | 2 | 1 | 3 |
| 2. | E-1201 | Proficiency English II | Core | 2 | 1 | 3 |
| 3. | P-1201 | Physics | Skill & Knowledge | 2 | 1 | 3 |
| 4. | CST-1211 | Programming Logic & Design (C++) | Core | 2 | 1 | 3 |
| 5. | CST-1242 | Discrete | Skill & Knowledge | 2 | 1 | 3 |
| 6. | CST(SK)-1203 | **Supporting Skills**  - Advanced Office 365  - Digital Citizenship and Smart Living Society | Supporting Skills | 2 | 1 | 3 |
| **Total Credit Units** | | | | | | 18 |

**B.C.Tech. (Second Year (Semester I) or (Semester III) )**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr.** | **Subject Code** | **Course Description** | **Type** | **Pre-**  **requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto..**  **(Credit)** | **Credit**  **Units** |
| 1 | **E-2101** | English | **Core** |  | **2** | 1 | 3 |
| 2 | **CST-2111** | Programming Language Skill (Java) | **Core** |  | **2** | 1 | 3 |
| 3 | **CST-2142** | Calculus II | **Core** | CST-1142 | **2** | 1 | 3 |
| 4 | **CST-2133** | Digital Logic Design | **Core** |  | **2** | 1 | 3 |
| 5 | **CST-2124** | Database Management System | **Core** |  | **2** | 1 | 3 |
| 6 | **CST(SK)-2155** | **Skill & Knowledge (I)**  Web platform-based Development (HTML5+CSS)) | Core  (Individual Project + Lab Test) |  | **2** | 1 | 3 |
| **Total Credit Units** | | | | | | | **18** |

**B.C.Tech. (Second Year (Semester II) or (Semester IV))**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr.** | **Subject Code** | **Course Description** | **Type** | **Pre-**  **requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto..**  **(Credit)** | **Credit**  **Units** |
| 1 | **E-2201** | English | **Core** |  | **2** | **1** | **3** |
| 2 | **CST-2211** | Data Structure and Algorithms | **Core** |  | **2** | **1** | **3** |
| 3 | **CST-2242** | Linear Algebra | **Core** |  | **2** | **1** | **3** |
| 4 | **CST-2223** | Software Engineering | **Core** |  | **2** | **1** | **3** |
| 5 | **CT-2234** | Circuits and Electronics | **Core** |  | **2** | **1** | **3** |
| 6 | **CST(SS)-2205** | **Supporting Skill (III)**   * Arduino Fundamentals * J2EE Programming | **Elective** |  | **2** | **1** | **3** |
| **Total Credit Units** | | | | | | | **18** |

**B.C.Tech. (Third Year (Semester I) or (Semester V))**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr.** | **Subject**  **Code** | **Course Description** | **Subject Types** | **Pre-**  **requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto..**  **(Credit)** | **Credit**  **Units** |
| 1 | **CST-3131** | Computer Architecture and Organization -I | **Core** | CST-2133 | **2** | **1** | **3** |
| 2 | **CST-3142** | Differential Equations and Numerical Analysis | **Core** | CST-2142 | **2** | **1** | **3** |
| 3 | **CST-3113** | Artificial Intelligence | **Core** | - | **2** | **1** | **3** |
| 4 | **CT-3134** | Electronic Devices | **Core** | - | **2** | **1** | **3** |
| 5 | **CT-3135** | Control Systems | **Core** | - | **2** | **1** | **3** |
| 6 | **CT(SK)-3136** | **Skills & Knowledge (II)**  Linux Fundamentals and Administration | **Core** | - | **1** | **1** | **2** |
| 7 | **CST(SK)-3157** | **Skills & Knowledge (III)**  - Financial management & Accounting | **Core** | - | **1** | **-** | **1** |
| **Total Credit Units** | | | | | | | **18** |

**B.C.Tech. (Third Year (Semester II) or (Semester VI))**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr.** | **Subject**  **Code** | **Course Description** | **Subject Types** | **Pre-requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto.**  **(Credit)** | **Credit**  **Units** |
| 1 | **CST-3211** | Operating System | **Core** | - | 2 | 1 | 3 |
| 2 | **CST-3242** | Probability and Statistics | **Core** | - | 2 | 1 | 3 |
| 3 | **CST-3213** | Professional Ethics | **Core** | - | 1 | 1 | 2 |
| 4 | **CT-3234** | Computer Architecture and Organization - II | **Core** | CST-3131 | 2 | 1 | 3 |
| 5 | **CST-3235** | Computer Networks I | **Core** | - | 2 | 1 | 3 |
| 6 | **CST-3257** | Human Computer Interaction | **Core** | - | 2 | - | 2 |
| 7 | **CST-3256**  **(SS)** | **Supporting Skill (IV)**  - Applied Database and Application (ADO.Net, C#) | **Core** | - | - | 2 | 2 |
| **Total Credit Units** | | | | | | | **18** |

**B.C.Tech. (Fourth Year (Semester I) or (Semester VII))**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr.** | **Subject**  **Code** | **Course Description** | **Subject Types** | **Pre-requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto..**  **(Credit)** | **Credit**  **Units** |
| 1. | **Eng-4101** | Professional English: English for media | **Core** | - | **2** | **1** | **3** |
| 2. | **CST-4111** | Analysis of Algorithms | **Core** | CST-2211 | **2** | **1** | **3** |
| 3. | **CT-4132** | Digital Design | **Core** | CT-3234 | **2** | **1** | **3** |
| 4. | **CT-4133** | Computer Networks II | **Core** | CST-3235 | **2** | **1** | **3** |
| 5. | **CT-4134** | Embedded Systems | **Core** | - | **2** | **1** | **3** |
| 6. | **CST-4125** | Software Project Management | **Core** | - | **2** | **1** | **3** |
| **Total Credit Units** | | | | | | | **18** |

**B.C.Tech. (Fourth Year (Semester II) or (Semester VIII)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr.** | **Subject**  **Code** | **Course Description** | **Subject Types** | **Pre-requisite** | **Lecture**  **(Credit)** | **Practical/**  **Lab/Tuto.**  **(Credit)** | **Credit**  **Units** |
| 1. | **CST-4211** | Parallel and Distributed Computing | **Core** | - | **2** | **1** | **3** |
| 2. | **CST-4242** | Modeling and Simulation | **Core** | CST-3242 | **2** | **1** | **3** |
| 3. | **CT-4233** | Cryptography and Network Security | **Core** | - | **2** | **1** | **3** |
| 4. | **CT-4234** | Embedded Systems Integrating IoT | **Core** | CT-4134 | **2** | **1** | **3** |
| 5. | **CT-4235** | **Elective I**  Signals and Systems | **Technical Elective**  **(Choose 2 out of 3)** | - | **2** | **1** | **3** |
| 6. | **CT-4236** | **Elective II**  Cyber Security and Ethical Hacking | - | **2** | **1** | **3** |
| 7. | **CST-4257** | **Elective III**  Digital Business and  e-Commerce | CST-3157 | **2** | **1** | **3** |
| **Total Credit Units** | | | | | | | **18** |

**B.C.Tech. (Fifth Year (Semester I) or (Semester IX))**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr.** | **Subject Code** | **Course Description** | **Type** | **Pre- requisite** | **Lecture**  **(Credit)** | **Practical/**  **Tutorial/ Lab/ (ACU)** | **ACU** |
| 1. | **Eng-5101** | Communication Skills; | **Core** | - | **1** | **1** | **2** |
| 2. | **CT-5131** | Digital Forensics | **Core** | - | **2** | **1** | **3** |
| 3. | **CT-5132** | **Advanced Networking** | **Core** | CT-4133 | **2** | **1** | **3** |
| 4. | **CST-5123A**  **CST-5123B** | **Data Science**   1. Data Science Fundamental 2. Data Analytic and Mining | **Elective**  **(Choose 1 out of 2)** | - | **2** | **1** | **3** |
| 5. | **CT-5134** | Digital Signal Processing | **Elective**  **(Choose 1 out of 3)** | CT-4235 | **2** | **1** | **3** |
| 6. | **CST-5155** | Enterprise Resource Planning | CST-4257 | **2** | **1** | **3** |
| 7. | **CT-5136** | Image Processing and Computer Vision | - | **2** | **1** | **3** |
| **Total Credit Units** | | | | | | | **14** |

**Fifth Year (B.C.Tech.) (Semester X)**

**Internship - 6 Credits**

**Total Credits – Semester 1 to 10 = 164 Credits**