

**Course Matrix and Syllabus**

**(UG Programs)**

**Content:**

**B.Tech Computer Science**

1. Cloud Technology and Information Security

**BCA (Dual Specialisation)**

1. Cloud Technology and Information Security



B. Tech in Cloud Technology and Information Security

**Course Matrix**

**Semester I**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Theory** | | | | | | |
| **SL No.** | **Course Code** | **Title of the Paper** | **Hrs/week** | | | **Credits** |
| **L** | **P** | **T** |
| 1 | B.Tech101 | Technical English - I | 3 | 1 | 0 | 4 |
| 2 | B.Tech102 | Mathematics - I | 3 | 1 | 0 | 4 |
| 3 | B.Tech103 | Engineering Physics - I | 3 | 0 | 0 | 3 |
| 4 | B.Tech104 | Engineering Chemistry - I | 3 | 0 | 0 | 3 |
| 5 | B.Tech105 | Engineering Graphics | 2 | 3 | 0 | 5 |
| 6 | B.Tech106 | Fundamentals of Computing and Programming | 3 | 0 | 0 | 3 |
| **Practical** | | | | | | |
| 7 | B.Tech107 | Computer Practice Laboratory -I | 0 | 0 | 3 | 2 |
| 8 | B.Tech108 | Engineering Practices Laboratory | 0 | 0 | 3 | 2 |
| 9 | B.Tech109 | \* Physics & Chemistry Laboratory I | 0 | 0 | 3 | - |
| **Total** | | | **17** | **5** | **9** | **26** |

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**Semester II**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Theory** | | | | | | |
| **SL No.** | **Course Code** | **Title of the Paper** | **Hrs/week** | | | **Credits** |
| **L** | **P** | **T** |
| 1 | B.Tech201 | Technical English – II\* | 3 | 1 | 0 | 4 |
| 2 | B.Tech202 | Mathematics – II\* | 3 | 1 | 0 | 4 |
| 3 | B.Tech203 | Engineering Physics – II\* | 3 | 0 | 0 | 3 |
| 4 | B.Tech204 | Engineering Chemistry – II\* | 3 | 0 | 0 | 3 |
| 5 | B.Tech205 | Operating Systems – Building Blocks | 3 | 1 | 0 | 4 |
| 6 | B.Tech206 | Introduction to IT Security | 4 | 0 | 0 | 4 |
| **Practical** | | | | | | |
| 7 | B.Tech207 | Programming with C ++ - Lab | 0 | 1 | 2 | 2 |
| 8 | B.Tech208 | Introduction to Information Security - Lab | 0 | 0 | 3 | 2 |
| 9 | B.Tech209 | Office Automation Tools - Lab | 0 | 1 | 2 | 2 |
| **Total** | | | **19** | **5** | **7** | **28** |
| 10 | B.Tech210 | English Language Laboratory \* | 0 | 0 | 2 | - |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Theory** | | | | | | |
| **SL No.** | **Course Code** | **Title of the Paper** | **Hrs/week** | | | **Credits** |
| **L** | **P** | **T** |
| 1 | B.Tech301 | Security Threats and Trends | 3 | 0 | 0 | 3 |
| 2 | B.Tech302 | OSI layer & Security | 3 | 0 | 0 | 3 |
| 3 | B.Tech303 | Cryptography Fundamentals | 3 | 0 | 0 | 3 |
| 4 | B.Tech304 | System Configuration and Maintenance | 3 | 1 | 0 | 4 |
| 5 | B.Tech305 | Designing Enterprise Networks (CCNA) | 3 | 0 | 0 | 3 |
| 6 | B.Tech306 | Fundamentals of Operating Systems ( Windows 7) | 3 | 0 | 0 | 3 |
| **Practical** | | | | | | |
| 7 | B.Tech307 | Designing Enterprise Networks - Lab | 0 | 1 | 2 | 2 |
| 8 | B.Tech308 | Network Security - Lab | 0 | 0 | 3 | 2 |
| 9 | B.Tech309 | Fundamentals of Operating Systems ( Windows 7) - Lab | 0 | 1 | 2 | 2 |
| **Total** | | | **18** | **1** | **9** | **25** |

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**Semester III**

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**Semester IV**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Theory** | | | | | | |
| **SL No.** | **Course Code** | **Title of the Paper** | **Hrs/week** | | | **Credits** |
| **L** | **P** | **T** |
| 1 | B.Tech401 | Introduction to Cloud Technology | 3 | 1 | 0 | 4 |
| 2 | B.Tech402 | Introduction to Linux/Unix | 3 | 0 | 0 | 3 |
| 3 | B.Tech403 | Advanced Cryptography | 3 | 0 | 0 | 3 |
| 4 | B.Tech404 | Basics of Server Operating System (Windows Server 2008) | 3 | 1 | 0 | 4 |
| 5 | B.Tech405 | Database Security Fundamentals | 3 | 0 | 0 | 3 |
| 6 | B.Tech406 | Ethical Hacking Basics | 3 | 0 | 0 | 3 |
| **Practical** | | | | | | |
| 7 | B.Tech407 | Introduction to Linux/Unix - Lab | 0 | 1 | 2 | 2 |
| 8 | B.Tech408 | Basics of Server Operating System (Windows Server 2008) - Lab | 0 | 0 | 3 | 2 |
| 9 | B.Tech409 | Ethical Hacking Basics - Lab | 0 | 0 | 3 | 2 |
| **Total** | | | **18** | **3** | **8** | **26** |

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**Semester V**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Theory** | | | | | | |
| **SL No.** | **Course Code** | **Title of the Paper** | **Hrs/week** | | | **Credits** |
| **L** | **P** | **T** |
| 1 | B.Tech501 | Fundamentals of Virtualization | 3 | 0 | 0 | 3 |
| 2 | B.Tech502 | Fundamentals of Datacenter | 3 | 1 | 0 | 4 |
| 3 | B.Tech503 | Web Technology Fundamentals | 3 | 0 | 0 | 3 |
| 4 | B.Tech504 | COBIT, ValIT and RiskIT | 3 | 0 | 0 | 3 |
| 5 | B.Tech505 | Virtualization and Cloud Security | 3 | 0 | 0 | 3 |
| 6 | B.Tech506 | Advanced Ethical Hacking | 3 | 0 | 0 | 3 |
| **Practical** | | | | | | |
| 7 | B.Tech507 | Fundamentals of Virtualization - Lab | 0 | 1 | 2 | 2 |
| 8 | B.Tech508 | Web Technology Fundamentals - Lab | 0 | 1 | 2 | 2 |
| 9 | B.Tech509 | Advance Ethical Hacking - Lab | 0 | 0 | 3 | 2 |
| **Total** | | | **18** | **3** | **7** | **25** |

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**Semester VI**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Theory** | | | | | | |
| **SL No.** | **Course Code** | **Title of the Paper** | **Hrs/week** | | | **Credits** |
| **L** | **P** | **T** |
| 1 | B.Tech601 | Introduction to Windows Azure | 3 | 0 | 0 | 3 |
| 2 | B.Tech602 | Linux Administration | 3 | 0 | 0 | 3 |
| 3 | B.Tech603 | Cyber Forensics Basics | 2 | 0 | 2 | 4 |
| 4 | B.Tech604 | IT Governance, Risk and Information Security Audit | 3 | 0 | 0 | 3 |
| 5 | B.Tech605 | Elective I | 3 | 0 | 0 | 3 |
| 6 | B.Tech606 | Elective II | 3 | 0 | 0 | 3 |
| **Practical** | | | | | | |
| 7 | B.Tech607 | Introduction to Windows Azure - Lab | 0 | 1 | 2 | 2 |
| 8 | B.Tech608 | Linux Administration - Lab | 0 | 0 | 3 | 2 |
| 9 | B.Tech609 | Cyber Forensics - Lab | 0 | 0 | 1.5 | 1 |
| **Total** | | | **17** | **1** | **8.5** | **24** |

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**Semester VII**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Theory** | | | | | | |
| **SL No.** | **Course Code** | **Title of the Paper** | **Hrs/week** | | | **Credits** |
| **L** | **P** | **T** |
| 1 | B.Tech701 | Private Cloud Architecture | 3 | 0 | 0 | 3 |
| 2 | B.Tech702 | Cloud Web Services | 3 | 0 | 0 | 3 |
| 3 | B.Tech703 | Advanced Cyber Forensic and Investigation | 3 | 0 | 1 | 4 |
| 4 | B.Tech704 | Android Security | 3 | 0 | 0 | 3 |
| 5 | B.Tech705 | Elective III | 3 | 0 | 0 | 3 |
| 6 | B.Tech706 | Elective IV | 3 | 0 | 0 | 3 |
| **Practical** | | | | | | |
| 7 | B.Tech707 | Private Cloud Architecture - Lab | 0 | 1 | 2 | 2 |
| 8 | B.Tech708 | Cloud Web Services - Lab | 0 | 1 | 2 | 2 |
| 9 | B.Tech709 | Advanced Cyber Forensic and Investigation - Lab | 0 | 1 | 2 | 2 |
| **Total** | | | **17** | **3** | **7** | **25** |

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**Semester VIII**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Theory** | | | | | | |
| **SL No.** | **Course Code** | **Title of the Paper** | **Hrs/week** | | | **Credits** |
| **L** | **P** | **T** |
| 1 | B.Tech801 | Elective V | 3 | 0 | 0 | 3 |
| 2 | B.Tech802 | Elective VI | 3 | 0 | 0 | 3 |
| **Practical** | | | | | | |
| 3 |  | Internship/Project | 0 | 0 | 12 | 6 |
| **Total** | | | **3** | **0** | **12** | **12** |

|  |
| --- |
| **Electives** |

**Semester VI - Elective I**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SL No.** | **Course Code** | **COURSE TITLE** | **L** | **T** | **P** | **C** |
| 1 |  | Mail Servers | 3 | 0 | 0 | 3 |
| 2 |  | Introduction to VOIP | 3 | 0 | 0 | 3 |

**Semester VI - Elective II**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SL No.** | **Course Code** | **COURSE TITLE** | **L** | **T** | **P** | **C** |
| 1 |  | OWASP Framework | 3 | 0 | 0 | 3 |
| 2 |  | Hacktivism, Cyber warfare and Cyber Terrorism | 3 | 0 | 0 | 3 |

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**Semester VII - Elective III**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SL No.** | **Course Code** | **COURSE TITLE** | **L** | **T** | **P** | **C** |
| 1 | 41 | ISO27001, PCIDSS and HIPAA | 3 | 0 | 0 | 3 |
| 2 | 41 | Linux Security and Forensics | 3 | 0 | 0 | 3 |

**Semester VII - Elective IV**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SL No.** | **Course Code** | **COURSE TITLE** | **L** | **T** | **P** | **C** |
| 1 | 42 | Advanced Web Technology | 3 | 0 | 0 | 3 |
| 2 | 42 | Fundamentals of IT Infrastructure Library | 3 | 0 | 0 | 3 |

**Semester VIII - Elective V**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SL No.** | **Course Code** | **COURSE TITLE** | **L** | **T** | **P** | **C** |
| 1 | 43 | Professional Development Skills | 3 | 0 | 0 | 3 |
| 2 | 43 | E-Commerce | 3 | 0 | 0 | 3 |

**Semester VIII - Elective VI**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SL No.** | **Course Code** | **COURSE TITLE** | **L** | **T** | **P** | **C** |
| 1 | 44 | Management Theory and Practice | 3 | 0 | 0 | 3 |
| 2 | 44 | Principles of Project Management | 3 | 0 | 0 | 3 |

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**BCA (Bachelor of Computer Applications)**

**Specialization in Cloud Technology and Information Security**

**BCA- Semester I**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** | **Name of subject** | **Hrs/week**  **L-T-P** | **Credits** | **UE** | **IA** | **Total** |
| 14BCA101 | Language | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA102 | English | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA103 | Fundamentals of mathematics | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA104 | Computer fundamentals & organization | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA105 | Programming in c | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA106 | Introduction to Linux | 4-0-0 | 04 | 60 | 40 | 100 |
| **Learning Labs** | | | | | | |
| 14BCA107L | C PROGRAMMING LAB | 0-0-3 | 01 | CA -50 | | 50 |
| 14BCA108L | Linux Lab | 0-0-3 | 01 | CA -50 | | 50 |
|  | **Total** | 30 | 26 |  | | **700** |

Credits-26

**BCA- Semester II**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** | **Name of subject** | **Hrs/week**  **L-T-P** | **Credits** | **UE** | **IA** | **Total** |
| 14BCA201 | Language | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA202 | English | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA203 | Operating system | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA204 | OOPS with C++ | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA205 | Data structures using c | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCA206 | Mind management & human values | 4-0-0 | 04 | 60 | 40 | 100 |
| **Learning labs** | | | | | | |
| 14BCA207L | OOPS with C++ Lab | 0-0-3 | 01 | CA -50 | | 50 |
| 14BCA208L | Data structures lab | 0-0-3 | 01 | CA -50 | | 50 |
|  | **Total** | 30 | 26 |  | | **700** |

Cumulative Credits-26+26=52**.**

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**BCA- Semester III**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** | **Name of subject** | **Hrs/week**  **L-T-P** | **Credits** | **UE** | | **IA** | **Total** |
| 14BCA301 | Information security fundamentals | 4-0-0 | 04 | 60 | | 40 | 100 |
| 14BCA302 | Software engineering | 4-0-0 | 04 | 60 | | 40 | 100 |
| 14BCA303 | RdBBA | 4-0-0 | 04 | 60 | | 40 | 100 |
| 14BCA304 | Computer networks | 4-0-0 | 04 | 60 | | 40 | 100 |
| 14BCA305 | PROGRAMMING in JAVA | 4-0-0 | 04 | 60 | | 40 | 100 |
| 14BCA306 | Indian constitution | 4-0-0 | 04 | 60 | 40 | | 100 |
| **Learning labs** | | | | | | | |
| 14BCA307L | RdBBA lab | 0-0-3 | 01 | CA -50 | | | 50 |
| 14BCA308L | Java programming lab | 0-0-3 | 01 | CA -50 | | | 50 |
|  | **Total** | 30 | 26 |  | | | **700** |

Cumulative Credits-26+26+26=78

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**BCA- Semester IV**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** | **Name of subject** | **Hrs/week**  **L-T-P** | **Credits** | **UE** | **IA** | **Total** |
| **Core Papers** | | | | | | |
| 14BCACTIS401 | Basics of Server Operating System | 4-0-0 | 04 | 60 | 40 | 100 |
| **Specialization -1 Information Security Management Services** | | | | | | |
| 14BCACTIS402 | Ethical Hacking Fundamentals | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCACTIS403 | Cryptography Fundamentals | 4-0-0 | 04 | 60 | 40 | 100 |
| **Specialization - 2 Cloud Technology** | | | | | | |
| 14BCACTIS404 | Introduction to Cloud Technology | 4-1-0 | 05 | 60 | 40 | 100 |
| 14BCACTIS405 | Fundamentals of Datacenter | 4-0-0 | 04 | 60 | 40 | 100 |
| **Learning Labs** | | | | | | |
| 14BCACTIS406L | Ethical Hacking - Lab | 0-0-3 | 01 | CA -50 | | 50 |
| 14BCACTIS407L | Introduction to Cloud Technology - Lab | 0-0-3 | 01 | CA -50 | | 50 |
|  | **Total** | 27 | 23 |  | | 600 |
| **Value Enhancing Course (VEC)** | | | | | | |
| 14BCA408 | Environmental Science | 4-0-0 | 04 | 60 | 40 | 100 |

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**BCA-Semester V**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** | **Name of subject** | **Hrs/week**  **L-T-P** | **Credits** | **UE** | **IA** | **Total** |
| **Specialization -1 Information Security Management Services** | | | | | | |
| 14BCACTIS501 | Computer Forensics and Investigation | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCACTIS502 | Virtualization and Cloud Security | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCACTIS503 | IT Governance, Risk, & Information Security Management | 4-0-0 | 04 | 60 | 40 | 100 |
| **Specialization - 2 Cloud Technology** | | | | | | |
| 14BCACTIS504 | Linux Administration | 4-0-0 | 04 | 60 | 40 | 100 |
| 14BCACTIS505 | Fundamentals of IT Infrastructure Library | 4-1-0 | 05 | 60 | 40 | 100 |
| 14BCACTIS506 | Principles of Virtualization | 4-0-0 | 04 | 60 | 40 | 100 |
| **Learning Labs** | | | | | | |
| 14BCACTIS507L | Computer Forensics and Investigation - lab | 0-0-3 | 01 | CA -50 | | 50 |
| 14BCACTIS508L | Linux Administration - Lab | 0-0-3 | 01 | CA -50 | | 50 |
|  | **Total** | 31 | 27 |  | | 700 |



**BCA-Semester VI**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** | **Name of subject** | **Hrs/week**  **L-T-P** | **Credits** | **UE** | | **IA** | **Total** |
| **Specialization -1 Information Security Management Services** | | | | | | | |
| 14BCACTIS601 | Mobile, Wireless and VOIP Security | 4-0-0 | 04 | 60 | | 40 | 100 |
| **Specialization - 2 Cloud Technology** | | | | | | | |
| 14BCACTIS602 | Introduction to Windows Azure | 4-0-0 | 04 | 60 | | 40 | 100 |
|  | **Total** | 08 | 08 |  |  | | 200 |

**Project work:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Subject Code** | **Title of the project** | **Hrs/week** | **Credits** | **IA** | **UE**  **Dissertation + Viva** | **Total** |
| 14BCACTIS603 | Project and Viva-Voce | 24 | 16 | 100 | 150 + 50 | 300 |

**Total credits = 156**

**Total Marks = 4000**