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| **B.Tech. CS&IT Semester – IV** | | | | | | | | | | | |
| **Sr. No.** | **Subject** | **Code** | **Hours** | | | | **Credits** | | | | **Total** |
| **CL** | **S** | **T** | **P** | **CL** | **S** | **T** | **P** | **Credits** |
| 4.1 | Domain Foundation – II | Refer Below Table | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 4 |
| 4.2 | Statistics - II | BTCS04CF42 | 2 | 2 | 0 | 2 | 2 | 2 | 0 | 1 | 5 |
| 4.3 | Computer Networks | BTCS04CC43 | 1 | 1 | 0 | 4 | 1 | 1 | 0 | 2 | 4 |
| 4.4 | Application Development Framework using .NET | BTCS04CC44 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 2 | 5 |
| 4.5 | Mobile Application Development | BTCS04CC45 | 1 | 1 | 0 | 4 | 1 | 1 | 0 | 2 | 4 |
| 4.6 | Interdisciplinary Course – IV | BTCS04GE46 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| 4.7 | Constitution of India | BTCS04GE47 | - | - | - | - | - | - | - | - | - |
|  |  | **TOTAL** | **6** | **9** | **2** | **16** | **6** | **9** | **2** | **8** | **25** |

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| **Domain Foundation – II** | **Code** |
| Business Processes and MIS in Banking, Financial Services & Insurance | BTCS04CF01 |
| Business Processes and MIS in Retail Management | BTCS04CF02 |
| Data Warehousing & Mining | BTCS04CF03 |

#### Course Curriculum Pack

**Business Processes and MIS in Banking, Financial Services & Insurance**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Program**  **Name** | B.Tech in Computer Science and Information Technology | | | |
| **Course Name** | Business Processes and MIS in  Banking, Financial Services & Insurance | **Course Code** | | BTCS04CF01 |
| **Version No** | **1.0** | **Version Update date** | | 21-11-2018 |
| **Pre- requisite** | * Working knowledge of (MS- Access and MS-PowerPoint) * Strong knowledge of MS- Excel * Understanding of computer functionality.   Basic understanding of working of an organization. | | | |
| **Course Outcome** | * Understand and describe the concept of information, information system and its impact on business environment. * Compute and extend the role played by information and information system in supporting various management activities and decision making processes. * To understand the fundamental concepts of system, information. * Design and create techniques for decision making by using various tools. * Explain changes in value proposition and business models brought about by internet and its applications. * To understand and apply concept of data business analytics in business organization. Students have information- and communication-technical base knowledge and in-depth knowledge of information technology challenges in an organization. | | | |
| **Total Credits / L:T:P:S** | **Total credit=**4 **L:T:P:S** =1:1:1:1 | | | |
| **Teaching & Examination Scheme** | **Teaching Scheme** | | **Examination Scheme** | |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | L  15 | P  15 | T  15 | S  15 | CAT  50 | CAP  40 | TEE  50 | TEP  40 | SA  20 |

**The Course Encompasses**

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| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Key Learning Outcomes** | **Instructional Activities** |
| **1** | Foundation of Information Systems Theory Duration (hh.mm): 03.00  Practical Duration (hh.mm): 6.00 | The Students should be able to:   * LO1: Understand various business processes in an organization. for enhancing business processes * LO2: Understand information system and its impact on organization decision making. * LO3: Understand various types of information systems. | Students would be able to learn various information systems for enhancing business processes.  Students will get to learn details about data & information and its critical issues like quality, time etc. Students would be able to identify various types of IS supporting the major  functions of business |
| **2** | Concepts of planning Theory Duration (hh.mm): 03.00  Practical Duration (hh.mm): 06.00 | The Students should be able to:   * LO1: Understand organizational planning * LO2: Students learn to identify entities in a business situation * LO3:Analyse data and make decisions using various tools * Conceptual understanding of quality assurance and requirement analysis | Students will be sensitized on various concepts of databases types, models and current trends like Big Data.  Students learn to identify entities in a business situation |
| **3** | Information System Development Approach & SDLC  Theory Duration (hh.mm): 03.00  Practical Duration (hh.mm): 06.00 | The Students should be able to:   * LO1: Understand office automation system * LO2: Implementation and evaluation of information system. * LO3: Study of marketing, financial, marketing, production. | Students get sensitized to the office automation system.  Explaining students about quality assurance , control documentation etc |

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| **4** | Business Analytics Theory Duration (hh.mm): 03.00  Practical Duration (hh.mm): 06.00 | The Students should be able to:   * LO1: Understand the concept of business intelligence, data mining Knowledge Management (KM) and Business Analytics * LO2: Understand business benefits from Business Analytics. * LO3: Understand and create tools for business analytics | Students will get sensitized to the concept of knowledge discovery and knowledge management. |
| **5** | Management Decision Making  Theory Duration (hh.mm): 03.00  Practical Duration (hh.mm): 06.00 | The Students should be able to:   * LO1: Understand various concepts related to data, information and decision making in an organization. * LO2: Students learn various stages and models of decision making. * LO3: Understand and create decision   for a real world problem using various tools. | Students would be able to conceptualize the process and stages of decision making. |

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| **Sr. No** | **Module/Units** | **Detailed Topic wise Syllabus (In bullet points)** | **Total Hours (L +T+P+ S)** |
| **1** | Foundation of Information Systems | * Introduction to information system in business * Fundamentals of information systems. * Solving business problems with information systems * Types of information systems. * Effectiveness and efficiency criteria in information system. | **6+0+6+7=19**  **QP:**  SSC/Q6303 **NOS:** SSC/N1102 |
| **2** | Concepts of planning | * Concept of organizational planning. * The Planning Process, Computational support for planning * Business applications of information technology: Internet & electronic commerce and its applications. * Enterprise Solutions, Information System for Business Operations(SDLC) * Information System for Strategic Advantage | **5+0+6+6=17**  **QP:** SSC/Q5201 **NOS:** TOS/SSC/N90 02 |
| **3** | Information System Development Approach & SDLC | * Office Automation System * Decision Support System, Expert System, System Analysis Tools (CASE Tools, DFDs, Data Analysis etc.) * Control documentation & quality Assurance, System Justification/ Requirement Analysis * H/w& S/w( Selection Acquisition, Bench Marking, Vendor Selection) | **7+0+6+6=19**  N/A |
| **4** | Business Analytics | * Knowledge and knowledge management systems * Business benefits from KM, organizational intelligence. * Overview of statistical perspective of BI, DM and BA. * Overview of Data Modeling, Applications of BA and BI, * Tools of business analytics for organizational decision making | **6+0+6+5=17**  **QP:** SSC/Q5201 **NOS:** TOS/SSC/N90 04 |
| **5** | Management Decision Making | * Data and its effect on Decision making | **6+0+6+6=18** |

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|  |  | * Decision making & information systems, decision structures (types of decisions). * Components and stages in decision making, * Using decision support systems. * Simon’s model for decision making. | **QP:** TOS/SSC/Q21 01  **NOS:**  SSC/N2101 |

**Syllabus**

**Learning Resources**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module / Unit** | **Text Books** | **Reference Book / Paper / Article**  **/ Online Resource (link) / Other** |
| **1** | Foundation of Information Systems | * Management Information Systems - Managing the Digital Firm | * Introduction to Information Systems |
| **2** | Concepts of planning | * Management Information Systems – A Global Digital   Firm Perspective | * Introduction to Information Systems |
| **3** | Information System Development Approach & SDLC | * Management Information System by Post & Anderson, Tata McGraw- Hill | * Introduction to Information Systems |
| **4** | Business Analytics | * Management Information Systems – A Global Digital   Firm Perspective | * **Competing on Analytics: The New Science of Winning by Davenport & Harris** |

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| **5** | Management Decision Making | * Essentials of Knowledge Management | * Management Information Systems – A Global Digital Firm Perspective |

**Assessment Matrix (Assignments / Activities)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr. No** | **Module/Unit** | **Learning Outcome** | **Written Test** | **Practical Experiment** | **Lab Experiment** | **Tutorial** | **Project** | **Seminar** | **Presentation** | **Research assignments** | **Case Study analysis** | **Group Discussions** | **Role Play** | **Prototype making** | **Other (Pl explain)** |
| 1 | Foundation of Information Systems | LO1 |  | √ |  | √ |  |  |  |  |  | √ |  |  |  |
|  |  | LO2 |  |  |  | √ |  |  |  | √ |  | √ |  |  |  |
|  |  | LO3 |  |  | √ | √ |  |  |  | √ |  | √ |  |  |  |
| 2 | Concepts of planning | LO1 |  |  | √ |  |  | √ |  |  |  |  |  |  |  |
|  |  | LO2 |  | √ | √ |  |  | √ |  | √ |  |  |  |  |  |
|  |  | LO3 |  |  | √ |  |  | √ |  |  |  |  |  |  |  |
| 3 | Information System Development Approach & SDLC | LO1 |  |  | √ | √ |  |  |  |  |  |  |  |  |  |
|  |  | LO2 |  |  | √ | √ |  |  |  |  |  |  |  |  |  |
|  |  | LO3 |  |  | √ | √ |  |  |  |  |  |  |  |  |  |
| 4 | Business  Analytics | LO1 |  |  |  |  |  | √ |  |  |  | √ |  |  |  |

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|  |  | LO2 |  |  |  | √ |  | √ |  |  |  | √ |  |  |  |
|  |  | LO3 |  |  |  | √ |  | √ |  |  |  | √ |  |  |  |
| 5 | Management Decision Making | LO1 |  |  | √ | √ |  | √ |  |  |  |  |  |  |  |
|  |  | LO2 |  |  | √ | √ |  | √ |  |  |  |  |  |  |  |
|  |  | LO3 |  |  | √ | √ |  | √ |  |  |  |  |  |  |  |

**Evaluation System**

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| --- | --- |
| **Description** | **Allotted marks** |
| Internal Theory | 50 |
| Internal Practical | 40 |
| Term end Theory | 50 |
| Term end Practical | 40 |
| Skill Assessment | 20 |
| TOTAL | 200 |

Internal Theory Assessment –

* Unit Tests – 10 Marks each, 5 number, Best three
* Assignments – 10 Marks each, 2 number Internal Practical Assessment –
* Journal Completion – 10 Marks
* Completion of Experiment / Activities – 10 Marks each, 5 number, Best three Term end Practical –
* Viva Voce on internal practical submission – 10 Marks
* Performance in practical experiment / Activity – 20 Marks
* Presentation in viva / experiment – 10 Marks Skill Assessment –
* Completion of Skill Journal – 5 Marks
* Completion of Activities / Projects during Skill Sessions – 10 Marks
* Viva voce – 5 Marks

#### Weightage of Units for Examination

|  |  |
| --- | --- |
| **Unit** | **% weightage** |
| 1.Foundation of Information Systems | **15** |
| 2.Concepts of planning | **25** |

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| --- | --- |
|  |  |
| 3.Information System Development Approach & SDLC | **20** |
| 4.Business Analytics | **15** |
| 5.Management Decision Making | **25** |

**Teaching Plan (Classroom Lectures)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Session Number** | **Module/Unit** | **Topic** | **Week Number** |
| 1. | Foundation of Information Systems | * Introduction to information system in business. * fundamentals of information systems | 1 |
| 2. | Foundation of Information Systems | * Solving business problems with information systems * Types of information systems | 2 |
| 3. | Foundation of Information Systems | * Effectiveness and efficiency criteria in information system. | 3 |
| 4. | Concepts of planning | * Concept of organizational planning, The Planning Process, Computational support for planning | 4 |
| 5. | Concepts of planning | * Business applications of information technology: Internet & electronic commerce and its applications Enterprise Solutions | 5 |
| 6. | Concepts of planning | * Information System for Business Operations (SDLC), Information System for Strategic Advantage. | 6 |
| 7. | Information System Development | * Office Automation System * Decision Support System, Expert System,   System Analysis Tools (CASE Tools, DFDs, Data Analysis etc.) | 7 |

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| --- | --- | --- | --- | --- | --- | --- |
|  | Approach & SDLC | |  | | |  |
| 8. | Information System Development Approach & SDLC | | * Control documentation & quality Assurance, System Justification/ Requirement Analysis | | | 8 |
| 9. | Information System Development Approach SDLC | & | * H/w& S/w( Selection Acquisition, Bench Marking, Vendor Selection) | | | 9 |
| 10. | Business Analytics | | * Knowledge and knowledge management systems, business benefits from KM | | | 10 |
| 11. | Business Analytics | | * Organizational intelligence. * Overview of statistical perspective of BI, DM and BA. Overview of Data Modeling | | | 11 |
| 12. | Business Analytics | | * Applications of BA and BI, * Tools of business analytics decision making | for | organizational | 12 |
| 13. | Management Decision Making | | * Data and its effect on Decision making, decision making & information systems | | | 13 |
| 14. | Management Decision Making | | * Decision structures (types of decisions), Components and stages in decision making. | | | 14 |
| 15. | Management Decision Making | | * Using decision support systems. Simon’s model for decision making. | | | 15 |

**Practical Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session Number** | **Module/Unit** | **Description of Experiments** | **Equipment**  **/Tools** | **Week Numbe r** |
| 1. | Foundation of Information Systems | * Case Study: Information processing tools for operational, tactical and strategic levels of the organization | MS-office-MS- Excel2013 | 1 |
| 2. | Foundation of Information Systems | * To understand the Inventory control systems in an organization | MS-office-MS- Excel2013 | 2 |
| 3. | Foundation of Information Systems | * To prepare a report on role of IT in Banking for loan allocation | MS-office-MS- Excel2013 | 3 |
| 4. | Concepts of planning | * Case Study: Organization having multiple departments. Each have a separate requirements of items. There is a central purchase dept. to which these requirements are sent. The purchase department integrates these requirements and sorts them item wise. Then this information is sent to a vendor identified for supplying these items. Every vendor sends a quotation for that item for the requisite quantity. Looking at this the purchase manager should be able to place the requirements to the right vendor. * Analyze the above situation and solve using   MS-Excess tool: When items are receive the stock is updated the stock is updated the | MS-office-MS- Excel2013 | 4 |
| 5. | Concepts of planning | * To create forms, reports   For keeping record of inventory databases of a firm using MS-Access | MS-office  MS-Access 2013 | 5 |
| 6. | Concepts of  planning | * Creating a simple application for a business organization | MS-Office  MS-Access 2013 | 6 |

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| 7. | Information System Development Approach & SDLC | * To prepare a report to review the information system of Dell/Hp etc. * H/w& S/w( Selection Acquisition, Bench Marking, Vendor Selection) | MS-Office MS-Excel | 7 |
| 8. | Information System Development Approach & SDLC | * Discuss information processing then suggest the appropriate information processing tools for operational, tactical and strategic levels of the organization | Computer system with MS—Office and Internet connection. | 8 |
| 9. | Information System Development Approach & SDLC | * Library book record management using MIS. (Use MIS to find out which are the fast moving books , which are less preferred statistically) | Computer system with MS—Office and Internet connection. | 9 |
| 10. | Business Analytics | * To understand the Basic working functioning of XLMiner © Frontline Solver | XL-miner software | 10 |
| 11. | Business Analytics | * Data analysis using tools like XLMiner © Frontline Solver | XL-miner software | 11 |
| 12. | Business Analytics | * Business decision using tools like XLMiner © Frontline Solver | XL-miner software | 12 |
| 13. | Management Decision Making | * Discussion on contemporary issues related to business, banks using various tools of IT | Contemporary case studies, news articles and data sets will be provided to the participants for analysis.  Computer system with MS—Office | 13 |

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| --- | --- | --- | --- | --- |
|  |  |  | and Internet  connection. |  |
| 14. | Management Decision Making | * Discussion on contemporary issues related to insurance, financial services using various tools of IT | Contemporary  case studies, news articles and | 14 |
|  |  | data sets will be |  |
|  |  | provided to the |  |
|  |  | participants for |  |
|  |  | analysis. |  |
|  |  | Computer system with MS—Office  and Internet connection. |  |
| 15. | Management Decision Making | * To learn and apply Data Visualization, and Business Analytics in different domains. | Contemporary case studies,  news articles and | 15 |
|  |  | data sets will be |  |
|  |  | provided to the |  |
|  |  | participants for |  |
|  |  | analysis. |  |
|  |  | Computer system with MS—Office and Internet connection |  |
|  |  |  |  |  |

**Tutorial Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session**  **Numbe r** | **Module/Unit** | **Description of Tutorial** | **Equipment /Tools** | **Week Number** |
| 1. | 1.Foundation of Information Systems | * Solving business problems with information systems |  | 1 |
| 2. | 1.Foundation of Information  Systems | * Understand information system and its impact on |  | 2 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | organization decision making. |  |  |
| 3. | 2.Concepts of planning | * The Planning Process for organizations |  | 3 |
| 4. | 2.Concepts of planning | * Information System for Strategic Advantage. |  | 4 |
| 5. | 2.Concepts of planning | * Information System for   Business Operations (SDLC) |  | 5 |
| 6. | 3. Information System Development Approach & SDLC | * Office Automation System * Decision Support System, Expert System, |  | 6 |
| 7. | 3. Information System Development Approach & SDLC | * System Analysis Tools (CASE Tools, DFDs, Data Analysis etc.) |  | 7 |
| 8. | 3. Information System Development Approach & SDLC | * H/w& S/w( Selection Acquisition, Bench Marking, Vendor Selection) |  | 8 |
| 9. | 4.Business Analytics | * Perspective of BI, DM and BA. |  | 9 |
| 10 | 4. Business Analytics | * Tools of business analytics for organizational decision making |  | 10 |
| 11 | 4. Business Analytics | * Overview of Data Modeling |  | 11 |
| 12 | 5.Management Decision Making | * Data and its effect on Decision making, |  | 12 |
| 13 | 5. Management Decision Making | * decision making & information systems |  | 13 |

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| 14 | 5. Management Decision Making | * Components and stages in decision making. |  | 14 |
| 15 | 5.Management Decision Making | * Simon’s model for decision making. |  | 15 |

**Skill Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session Number** | **Module/Unit** | **Description of Activity** | **Equipment /Tools** | **Week Number** |
| 1 | Foundation of Information Systems | * How to do Business process enhancement through information technology | MS-office-MS- Excel2013 | 1 |
| 2 | Foundation of Information Systems | * Solving business problems with information systems | MS-office-MS- Excel2013 | 2 |
| 3 | Foundation of Information Systems | * Types of information systems(DSS, ESS, Expert system, MIS) * Effectiveness and   efficiency criteria in information system. | MS-office-MS- Excel2013 | 3 |
| 4 | Concepts of planning | * Concept of organizational planning * Computational support for planning | MS-office-MS- Excel2013 | 4 |
| 5 | Concepts of planning | * Business applications of information technology * electronic commerce and its applications Enterprise Solutions | MS-office  MS-Access 2013 | 5 |
| 6 | Concepts of planning | * Information System for Business Operations(SDLC) | MS-Office  MS-Access 2013 | 6 |

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|  |  | * Information System Strategic Advantage | for |  |  |
| 7 | Information System Development Approach & SDLC | * Analysis & Design of Information Systems * Implementation & Evaluation | | MS-Office MS-Excel | 7 |
| 8 | Information System Development Approach & SDLC | * Pitfalls in MIS Development * A study of Financial MIS | | Computer system with MS—Office and Internet connection. | 8 |
| 9 | Information System Development Approach & SDLC | * Functional MIS: A Study of Marketing, Personnel * Study of Production MIS | | Computer system with MS—Office and Internet connection. | 9 |
| 10 | Business Analytics | * To understand the basic principles of Knowledge management in Information system. * To understand KM and to learn its management. | | XL-miner software | 10 |
| 11 | Business Analytics | * To understand the basics of Organizational intelligence. | | XL-miner software | 11 |
| 12 | Business Analytics | * To learn the Data Modeling * To learn functioning of various Tools of business analytics for organizational   decision making | | XL-miner software | 12 |
| 13 | Management Decision Making | * To determine about various Components in Decision making | | Contemporary case  studies, news articles | 13 |
|  |  | and data sets will be |  |
|  |  | provided to the |  |
|  |  | participants for |  |
|  |  | analysis. |  |

|  |  |  |  |  |
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|  |  |  | Computer system with MS—Office and Internet connection. |  |
| 14 | Management Decision Making | * To learn the strategies for Effective decision making in Business using I.T | Contemporary case  studies, news articles | 14 |
|  |  | and data sets will be |  |
|  |  | provided to the |  |
|  |  | participants for |  |
|  |  | analysis. |  |
|  |  | Computer system with MS—Office and Internet connection. |  |
| 15 | Management | * To learn how to make Business decisions using Decision support system * To learn and apply Simon’s model strategy in a given virtual case. | Contemporary case | 15 |
|  | Decision Making | studies, news articles |  |
|  |  | and data sets will be |  |
|  |  | provided to the |  |
|  |  | participants for |  |
|  |  | analysis. |  |
|  |  | Computer system |  |
|  |  | with MS—Office and |  |
|  |  | Internet connection. |  |

**Course Curriculum Pack**

**Business Processes and MIS in Retail Management**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Program**  **Name** | B.Tech in Computer Science and Information Technology | | | | | | | | | | |
| **Course**  **Name** | Business Processes and MIS in Retail Management | | | | **Course Code** | | | | BTCS04CF02 | | |
| **Version No** | **1.0** | | | | **Version Update date** | | | | 21-11-2018 | | |
| **Pre- requisite** | * Working knowledge of (MS- Access and MS-PowerPoint) * Strong knowledge of MS- Excel * Understanding of computer functionality.   Basic understanding of working of an organization. | | | | | | | | | | |
| **Course Outcome** | * Understand and describe the concept of information, information system and its impact on business environment. * Compute and extend the role played by information and information system in supporting various management activities and decision making processes. * To understand the fundamental concepts of system, information. * Design and create techniques for decision making by using various tools. * Explain changes in value proposition and business models brought about by internet and its applications. * To understand and apply concept of data business analytics in business organization. Students have information- and communication-technical base knowledge and in-depth knowledge of information technology challenges in an organization. | | | | | | | | | | |
| **Total Credits / L:T:P:S** | **Total credit=**4 **L:T:P:S** =1:1:1:1 | | | | | | | | | | |
| **Teaching & Examination Scheme** | **Teaching Scheme** | | | | | **Examination Scheme** | | | | | |
|  | L  15 | P  15 | T  15 | S  15 | | CAT  50 | CAP  40 | TEE  50 | | TEP  40 | SA  20 |

**The Course Encompasses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Key Learning Outcomes** | **Instructional Activities** |
| **1** | Foundation of Information Systems Theory Duration (hh.mm): 03.00  Practical Duration (hh.mm): 6.00 | The Students should be able to:   * LO1: Understand various business processes in an organization. for enhancing business processes * LO2: Understand information system and its impact on organization decision making. * LO3: Understand various types of information systems. | Students would be able to learn various information systems for enhancing business processes.  Students will get to learn details about data & information and its critical issues like quality, time etc. Students would be able to identify various types of IS  supporting the major functions of business |
| **2** | Concepts of planning Theory Duration (hh.mm): 03.00  Practical Duration (hh.mm): 06.00 | The Students should be able to:   * LO1: Understand organizational planning * LO2: Students learn to identify entities in a business situation * LO3:Understand and create real world database application using MS-Excel/programming language for form designing, report creation | Students will be sensitized on various concepts of databases types, models and current trends like Big Data.  Students learn to identify entities in a business situation |
| **3** | Retail Management Information System - Types  Theory Duration (hh.mm): 03.00  Practical Duration (hh.mm): 06.00 | The Students should be able to:   * LO1: Understand design of information system * LO2: Implementation and evaluation of information system. * LO3: Study of Integration between payments, inventory and transactions | Students get sensitized to the changes in value proposition and business models brought about by internet and its applications.  Explaining students about the integration between payments , inventory and  transactions |
| **4** | Business Analytics Theory Duration (hh.mm): 03.00 | The Students should be able to:   * LO1: Understand the concept of business intelligence, data mining Knowledge Management (KM) and Business Analytics | Students will get sensitized to the concept of knowledge discovery and knowledge  management. |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Practical Duration (hh.mm): 06.00 | * LO2: Understand business benefits from Business Analytics. * LO3: Understand and create tools for business analytics |  |
| **5** | Management Decision | The Students should be able to:   * LO1: Understand various concepts related to data, information and decision making in an organization. * LO2: Students learn various stages and models of decision making. * LO3: Understand and create decision   for a real world problem using various tools. | Students would be able |
|  | Making | to conceptualize the |
|  | Theory Duration | process and stages of |
|  | (hh.mm): 03.00 | decision making. |
|  | Practical Duration |  |
|  | (hh.mm): 06.00 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Detailed Topic wise Syllabus (In bullet points)** | **Total Hours (L +T+P+ S)** |
| **1** | Foundation of Information Systems | * Introduction to information system in business * Fundamentals of information systems. * Solving business problems with information systems * Types of information systems. * Effectiveness and efficiency criteria in information system. | **6+0+6+7=19**  **QP:**  SSC/Q6303 **NOS:** SSC/N1102 |
| **2** | Concepts of planning | * Concept of organizational planning. * The Planning Process, Computational support for planning * Business applications of information technology: Internet & electronic commerce and its applications. * Enterprise Solutions, Information System for Business Operations(SDLC) * Information System for Strategic Advantage | **5+0+6+6=17**  **QP:** SSC/Q5201 **NOS:** TOS/SSC/N90 02 |
| **3** | Retail Management Information System - Types | * Retail management information systems for each industry, including, for example, fashion, department store, supermarket, furniture or prescription drugs. * Integration between payments, inventory and transactions improves operations and reduces costs by preventing duplicate entries. * Retail management information systems business models such as franchise,   consignment, direct sales or online. | **7+0+6+6=19**  N/A |
| **4** | Business Analytics | * Knowledge and knowledge management systems * Business benefits from KM, organizational intelligence. * Overview of statistical perspective of BI, DM and BA. * Overview of Data Modeling, Applications of BA and BI, * Tools of business analytics for organizational decision making | **6+0+6+5=17**  **QP:** SSC/Q5201 **NOS:** TOS/SSC/N90 04 |

|  |  |  |  |
| --- | --- | --- | --- |
| **5** | Management Decision Making | * Data and its effect on Decision making * Decision making & information systems, decision structures (types of decisions). * Components and stages in decision making, * Using decision support systems. * Simon’s model for decision making. | **6+0+6+6=18**  **QP:** TOS/SSC/Q21 01  **NOS:**  SSC/N2101 |

**Syllabus**

**Learning Resources**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module / Unit** | **Text Books** | **Reference Book / Paper / Article**  **/ Online Resource (link) / Other** |
| **1** | Foundation of Information Systems | * Management Information Systems - Managing the Digital Firm | * Introduction to Information Systems |
| **2** | Concepts of planning | * Management Information Systems – A Global Digital Firm Perspective | * Introduction to Information Systems |
| **3** | Retail Management Information System -Types | * Management Information Systems – A Global Digital Firm Perspective | * Introduction to Information Systems |
| **4** | Business Analytics | * Management Information Systems – A Global Digital | * **Competing on Analytics: The New Science of Winning by Davenport & Harris** |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Firm  Perspective |  |
| **5** | Management Decision Making | * Essentials of Knowledge Management | * Management Information Systems – A Global Digital Firm Perspective |

**Assessment Matrix (Assignments / Activities)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr. No** | **Module/Unit** | **Learning Outcome** | **Written Test** | **Practical Experiment** | **Lab Experiment** | **Tutorial** | **Project** | **Seminar** | **Presentation** | **Research assignments** | **Case Study analysis** | **Group Discussions** | **Role Play** | **Prototype making** | **Other (Pl explain)** |
| 1 | Foundation of Information Systems | LO1 |  | √ |  | √ |  |  |  |  |  | √ |  |  |  |
|  |  | LO2 |  |  |  | √ |  |  |  | √ |  | √ |  |  |  |
|  |  | LO3 |  |  | √ | √ |  |  |  | √ |  | √ |  |  |  |
| 2 | Concepts of planning | LO1 |  |  | √ |  |  | √ |  |  |  |  |  |  |  |
|  |  | LO2 |  | √ | √ |  |  | √ |  | √ |  |  |  |  |  |
|  |  | LO3 |  |  | √ |  |  | √ |  |  |  |  |  |  |  |
| 3 | Retail Management Information System -Types | LO1 |  |  | √ | √ |  |  |  |  |  |  |  |  |  |
|  |  | LO2 |  |  | √ | √ |  |  |  |  |  |  |  |  |  |
|  |  | LO3 |  |  | √ | √ |  |  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4 | Business  Analytics | LO1 |  |  |  |  |  | √ |  |  |  | √ |  |  |  |
|  |  | LO2 |  |  |  | √ |  | √ |  |  |  | √ |  |  |  |
|  |  | LO3 |  |  |  | √ |  | √ |  |  |  | √ |  |  |  |
| 5 | Management Decision Making | LO1 |  |  | √ | √ |  | √ |  |  |  |  |  |  |  |
|  |  | LO2 |  |  | √ | √ |  | √ |  |  |  |  |  |  |  |
|  |  | LO3 |  |  | √ | √ |  | √ |  |  |  |  |  |  |  |

**Evaluation System**

|  |  |
| --- | --- |
| **Description** | **Allotted marks** |
| Internal Theory | 50 |
| Internal Practical | 40 |
| Term end Theory | 50 |
| Term end Practical | 40 |
| Skill Assessment | 20 |
| TOTAL | 200 |

Internal Theory Assessment –

* Unit Tests – 10 Marks each, 5 number, Best three
* Assignments – 10 Marks each, 2 number Internal Practical Assessment –
* Journal Completion – 10 Marks
* Completion of Experiment / Activities – 10 Marks each, 5 number, Best three Term end Practical –
* Viva Voce on internal practical submission – 10 Marks
* Performance in practical experiment / Activity – 20 Marks
* Presentation in viva / experiment – 10 Marks Skill Assessment –
* Completion of Skill Journal – 5 Marks
* Completion of Activities / Projects during Skill Sessions – 10 Marks
* Viva voce – 5 Marks

#### Weightage of Units for Examination

|  |  |
| --- | --- |
| **Unit** | **% weightage** |
| 1.Foundation of Information Systems | **15** |
| 2.Concepts of planning | **25** |
| 3.Retail Management Information System -Types | **20** |
| 4.Business Analytics | **15** |
| 5.Management Decision Making | **25** |

**Teaching Plan (Classroom Lectures)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Session Number** | **Module/Unit** | **Topic** | **Week Number** |
| 1. | Foundation of Information Systems | * Introduction to information system in business. * fundamentals of information systems | 1 |
| 2. | Foundation of Information Systems | * Solving business problems with information systems * Types of information systems | 2 |
| 3. | Foundation of Information Systems | * Effectiveness and efficiency criteria in information system. | 3 |
| 4. | Concepts of planning | * Concept of organizational planning, The Planning Process, Computational support for planning | 4 |
| 5. | Concepts of planning | * Business applications of information technology: Internet & electronic commerce and its applications Enterprise Solutions | 5 |

|  |  |  |  |
| --- | --- | --- | --- |
| 6. | Concepts of planning | * Information System for Business Operations (SDLC), Information System for Strategic Advantage. | 6 |
| 7. | Retail Management Information System -Types | * Retail management information systems for each industry, including, for example, fashion, department store, supermarket, furniture or prescription drugs. | 7 |
| 8. | Retail Management Information System -Types | * Integration between payments, inventory and transactions improves operations and reduces costs by preventing duplicate entries. | 8 |
| 9. | Retail Management Information System -Types | * Retail management information systems business models such as franchise, consignment, direct sales or online. | 9 |
| 10. | Business Analytics | * Knowledge and knowledge management systems, business benefits from KM | 10 |
| 11. | Business Analytics | * Organizational intelligence. * Overview of statistical perspective of BI, DM and BA. Overview of Data Modeling | 11 |
| 12. | Business Analytics | * Applications of BA and BI, * Tools of business analytics for organizational decision making | 12 |
| 13. | Management Decision Making | * Data and its effect on Decision making, decision making & information systems | 13 |
| 14. | Management Decision Making | * Decision structures (types of decisions), Components and stages in decision making. | 14 |
| 15. | Management  Decision Making | * Using decision support systems. Simon’s model for decision making. | 15 |

**Practical Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session Number** | **Module/Unit** | **Description of Experiments** | **Equipment**  **/Tools** | **Week Numbe r** |
| 1 | Foundation of Information Systems | * Case Study: Information processing tools for operational, tactical and strategic levels of the organization | MS-office-MS- Excel2013 | 1 |
| 2 | Foundation of Information Systems | * To understand the Inventory control systems in an organization | MS-office-MS- Excel2013 | 2 |
| 3 | Foundation of Information Systems | * To prepare a report on role of IT in Banking for loan allocation | MS-office-MS- Excel2013 | 3 |
| 4 | Concepts of planning | * Case Study: Organization having multiple departments. Each have a separate requirements of items. There is a central purchase dept. to which these requirements are sent. The purchase department integrates these requirements and sorts them item wise. Then this information is sent to a vendor identified for supplying these items. Every vendor sends a quotation for that item for the requisite quantity. Looking at this the purchase manager should be able to place the requirements to the right vendor. * Analyze the above situation and solve using   MS-Excess tool: When items are receive the stock is updated the stock is updated the | MS-office-MS- Excel2013 | 4 |
| 5 | Concepts of planning | * To create forms, reports   For keeping record of inventory databases of a firm using MS-Access | MS-office  MS-Access 2013 | 5 |
| 6 | Concepts of  planning | * Creating a simple application for a business organization | MS-Office  MS-Access 2013 | 6 |

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| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| 7 | Retail Management Information System -Types | * To prepare a report to review the information system of Dell/Hp etc. * Case studies on business models such as franchise, consignment, direct sales or online. | MS-Office MS-Excel | 7 |
| 8 | Retail Management Information System -Types | * Discuss information processing then suggest the appropriate information processing tools for operational, tactical and strategic levels of the organization | Computer system with MS—Office and Internet connection. | 8 |
| 9 | Retail Management Information System -Types | * Library book record management using MIS. (Use MIS to find out which are the fast moving books , which are less preferred statistically) | Computer system with MS—Office and Internet connection. | 9 |
| 10 | Business Analytics | * To understand the Basic working functioning of XLMiner © Frontline Solver | XL-miner software | 10 |
| 11 | Business Analytics | * Data analysis using tools like XLMiner © Frontline Solver | XL-miner software | 11 |
| 12 | Business Analytics | * Business decision using tools like XLMiner © Frontline Solver | XL-miner software | 12 |
| 13 | Management Decision Making | * Discussion on contemporary issues related to business, banks using various tools of IT | Contemporary case studies, news articles and data sets will be provided to the participants for analysis.  Computer system with MS—Office and Internet connection. | 13 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 14 | Management Decision Making | * Discussion on contemporary issues related to insurance, financial services using various tools of IT | Contemporary case studies, news articles and data sets will be provided to the participants for analysis.  Computer system with MS—Office and Internet  connection. | 14 |
| 15 | Management Decision Making | * To learn and apply Data Visualization, and Business Analytics in different domains. | Contemporary case studies, news articles and data sets will be provided to the participants for analysis.  Computer system with MS—Office  and Internet connection | 15 |

**Tutorial Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session Numbe**  **r** | **Module/Unit** | **Description of Tutorial** | **Equipment /Tools** | **Week Number** |
| 1 | 1.Foundation of Information Systems | * Solving business problems with information systems |  | 1. |
| 2 | 1.Foundation of Information Systems | * Understand information system and its impact on organization decision making. |  | 2. |
| 3 | 2.Concepts of  planning | * The Planning Process for organizations |  | 3. |

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| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| 4 | 2.Concepts of planning | * Information System for Strategic Advantage. |  | 4. |
| 5 | 2.Concepts of planning | * Information System for Business Operations (SDLC) |  | 5. |
| 6 | 3. Retail Management Information System -Types | * Retail management information systems for each industry |  | 6. |
| 7 | 3. Retail Management Information  System -Types | * Integration between payments, inventory and transactions |  | 7. |
| 8 | 3. Retail Management Information  System -Types | * Retail management information systems business models |  | 8. |
| 9 | 4.Business Analytics | * Perspective of BI, DM and BA. |  | 9. |
| 10 | 4. Business Analytics | * Tools of business analytics for organizational decision making |  | 10. |
| 11 | 4. Business Analytics | * Overview of Data Modeling |  | 11. |
| 12 | 5.Management Decision Making | * Data and its effect on Decision making, |  | 12. |
| 13 | 5. Management Decision Making | * decision making & information systems |  | 13. |
| 14 | 5. Management Decision Making | * Components and stages in decision making. |  | 14. |
| 15 | 5.Management Decision Making | * Simon’s model for decision making. |  | 15. |

**Skill Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session Number** | **Module/Unit** | **Description of Activity** | **Equipment /Tools** | **Week Number** |
|  | Foundation of Information Systems | * How to do Business process enhancement through information technology | MS-office-MS- Excel2013 | 1 |
|  | Foundation of Information Systems | * Solving business problems with information systems | MS-office-MS- Excel2013 | 2 |
|  | Foundation of Information Systems | * Types of information systems(DSS, ESS, Expert system, MIS) * Effectiveness and   efficiency criteria in information system. | MS-office-MS- Excel2013 | 3 |
|  | Concepts of planning | * Concept of organizational planning * Computational support for planning | MS-office-MS- Excel2013 | 4 |
|  | Concepts of planning | * Business applications of information technology * electronic commerce and its applications Enterprise Solutions | MS-office  MS-Access 2013 | 5 |
|  | Concepts of planning | * Information System for Business Operations(SDLC) * Information System for Strategic Advantage | MS-Office  MS-Access 2013 | 6 |
|  | Retail Management Information System -Types | * Analysis & Design of Information Systems * Implementation & Evaluation | MS-Office MS-Excel | 7 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Retail Management Information System -Types | * Pitfalls in MIS Development * A study of Financial MIS | Computer system with MS—Office and Internet connection. | 8 |
|  | Retail Management Information System -Types | * Functional MIS: A Study of Marketing, Personnel * Study of Production MIS | Computer system with MS—Office and Internet connection. | 9 |
|  | Business Analytics | * To understand the basic principles of Knowledge management in Information system. * To understand KM and to learn its management. | XL-miner software | 10 |
|  | Business Analytics | * To understand the basics of Organizational intelligence. | XL-miner software | 11 |
|  | Business Analytics | * To learn the Data Modeling * To learn functioning of various Tools of business analytics for organizational decision making | XL-miner software | 12 |
|  | Management Decision Making | * To determine about various Components in Decision making | Contemporary case studies, news articles and data sets will be provided to the participants for analysis.  Computer system with MS—Office and Internet connection. | 13 |
|  | Management Decision Making | * To learn the strategies for Effective decision making in Business using I.T | Contemporary case studies, news articles and data sets will be  provided to the | 14 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | participants for analysis.  Computer system with MS—Office and Internet connection. |  |
|  | Management | * To learn how to make Business decisions using Decision support system * To learn and apply Simon’s model strategy in a given virtual case. | Contemporary case | 15 |
| Decision Making | studies, news articles |  |
|  | and data sets will be |  |
|  | provided to the |  |
|  | participants for |  |
|  | analysis. |  |
|  | Computer system |  |
|  | with MS—Office and |  |
|  | Internet connection. |  |

**Data Warehousing & Mining**

This course is aimed at training candidates for the course on *Data Warehousing & Mining* and aims at building the following key competencies amongst the candidates:

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Program Name** | **B.Tech. in Computer Science and Information Technology** | | | | | | | | | | |
| **Qualification Pack** |  | | | | | | | | | | |
| **Course Name** | **Data Warehousing & Mining** | | | | **Course Code** | | | | **BTCS04DEA3** | | |
| **Version No** | **1.0** | | | |  | | | |  | | |
| **Pre-requisite** | * **Adequate knowledge of statistics and mathematics.** * **Working knowledge on software.** * **Knowledge of writing code in computer programming language.** | | | | | | | | | | |
| **Course Outcome** | * To understand the role of data mining (DM) and data warehousing (DW). * To understand the nature of data and transform as per the need of the analysis. * To compute and analyze data using data mining techniques. * To understand and evaluate various data mining tools. * To understand process of data warehousing and creating data cubes. * To create solutions for the real world problems. | | | | | | | | | | |
| **Total Credits / L:T:P:S** | 4/ 1:1:1:1 | | | | | | | | | | |
| **Teaching &**  **Examination Scheme** | **Teaching Scheme** | | | | | **Examination Scheme** | | | | | |
|  | **L 15** | **T 15** | **P 15** | **S 15** | | CAT 50 | CAP 40 | TEE 50 | | TEP 40 | SA 20 |

## The Course Encompasses

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Key Learning Outcomes** | **Instructional Objectives** |
| **1** | **Introduction to Data Mining (DM)**  Theory Duration (hh.mm): 2.00 | The **candidates** should be able to:   * LO1: Understand scope of DM. | The candidates become familiar with the concepts DM |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | * LO2: Understand use of DM in various data set. * LO3: Understand various techniques of DM |  |
| **2** | **Knowing Data and Data Preprocessing**  Theory Duration (hh.mm): 3.00 | The **Candidates** should be able to:   * LO1: Understand of data and its importance in data set. * LO2: Examine data and checking properties on the available dataset. Verifying the important predictors | The candidates could be able to understand nature of data. Candidates will also be able to use basic statistics to understand characteristics of the data sets. |
|  |  | * LO3: Understand Basis concepts of Skewness, Kurtosis and distribution of data. |  |
|  |  | * LO4: Understand methods for data preprocessing and dimension reduction. |  |
|  |  | * LO 5: Students will be sensitized to the concept of data visualization. |  |
| **3** | **Data Warehousing and Data Cube Technology** | The **candidates** should be able to:   * LO1: Understand scope of data warehousing. * LO2: Understand concept of data cube. | The candidates could be able to understand data warehousing and data  cube. |
|  | Theory Duration (hh.mm): 5.00 |  |
| **4** | **Mining Frequent Patterns, Associations and Correlations** | The **candidates** should be able to: | The candidates can get conversant with mining frequent patterns, |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Theory Duration (hh.mm): 2.00 | * LO1: Understand concept of mining frequent data patterns. * LO2: Understand need of association rule. | association rule and correlations. |
| **5** | **Classification Basics, Cluster Analysis and Neural Networks**  Theory Duration (hh.mm): 3.00 | The **candidates** should be able to:   * LO1: Understand concept of classification through rule based classification and decision tree. | The candidates will be sensitized on the concept of classification cluster analysis. They will be conversant with use of neural networks for data  mining |
|  |  | * LO2: Understand cluster analysis. |  |
|  |  | * LO3: Understand use of neural networks for data mining. |  |

**Module/Unit wise Syllabus Details**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Detailed Topic wise Syllabus** | **References** |
| **1** | **Introduction to Data Mining**  Theory Duration (hh.mm): 02.00 | Introduction of DM, what kind of data to be mined? What kinds of patters can be mined? Various techniques of data mining Overview of statistical perspective of BI, DM and BA. Overview of Data Modeling, Applications of BA and BI – concepts of learning knowledge, Knowledge discovery and Analytical Intelligence. | Chapter 1 |
| **2** | **Knowing Data and Data Preprocessing** | Data objects & attributes types, testing  of normality, Outlier detection and | Chapter 2, 3 and 12 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Theory Duration (hh.mm): 03.00 | handling, Handling Missing values, Review of Skewness, Kurtosis, data exploration and preliminary steps for data set. Data cleaning, data integration, Data reduction and data discretization. |  |
| **3** | **Data Warehousing and Data Cube Technology**  Theory Duration (hh.mm): 05.00 | Data warehouse: basic concepts, Data warehouse Modeling : Data Cube and OLAP, Data warehouse design and usage, implementation. Data cube technology: Data cube computation- methods. | Chapter 4 and 5 |
| **4** | **Mining Frequent Patterns, Associations and Correlations** | Basic concepts, frequent item set mining methods, Introduction to association rule, Discovering association rules in traditional Databases. | Chapter 6 and 7 |
|  | Theory Duration (hh.mm): 02.00 |  |  |
| **5** | **Classification Basics, Cluster Analysis and Neural Networks**  Theory Duration (hh.mm): 3.00 | Basics of classification methods, classification methods – decision tree, rule based and Bayes classification. Cluster analysis: basic concepts and methods, advanced methods like neural networks and Support vector Machine. | Chapter 8, 9 and 10 |

**Module wise List of Activities/ Experiments/Practical/Tutorials**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Description** | **Equipment required Code** |
| **1** | **Introduction to Data Mining** | * Performing basic statistics operations on dataset. | Experiments will be done on WEKA , XLMiner and/or any |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | * Creating graphs. | various | charts | and | other Mining. | tool | for | Data |
| **2** | **Knowing Data and Data** | * Finding out extreme values | | | |  | | | |
|  | **Preprocessing** | (outliers).   * Handling outlier values. * Missing values handling. * Reducing dimensions. * Finding predictors for the study. * Preprocessing data sets | | | |
| **3** | **Data Warehousing and Data Cube Technology** | * Creating data cubes | | | |  | | | |
| **4** | **Mining Frequent Patterns, Associations and Correlations** | * Performing association rule * Mining frequent patters | | | |  | | | |
| **5** | **Classification Basics, Cluster Analysis and Neural Networks** | * Decision tree classification. * Cluster analysis of the created data set * Using neural networks and support vector machine for data mining | | | |  | | | |

**Text Books/Reference Books\***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No** | **Title of the Book** | **Author** | **Edition / volume** | **Text (T) Reference ®** |
| **1.** | Data Mining – Concepts and Techniques | Jiawei Han,  Micheline Kamber and Jian Pei | Elsevier, Third Edition | **T1** |
| **2** | “Data Mining for Business Intelligence – Concepts, Techniques  and Applications” | Galit Shmueli, Nitin  R. Patel and Peter C.  Bruce | Wiley India, 2009 (Reprint  – 2016) | **R1** |

**List of Unique Equipment required**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Description of Equipment** | **Equipment**  **Code** |
| **1** | **Introduction to Data**  **Mining** | Experiments will be done on WEKA , XLMiner and/or any other tool for Data Mining |  |
| **2** | **Knowing Data and Data**  **Preprocessing** |
| **3** | **Data Warehousing and**  **Data Cube Technology** |
| **4** | **Mining Frequent Patterns,**  **Associations and Correlations** |
| **5** | **Classification Basics, Cluster Analysis and Neural**  **Networks** |  |

**Assessment Matrix**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr**  **. N**  **o** | **Module/Unit** | **Learning Outcome ID** | **Le ar nin g Ou tco**  **me** | **Written Test** | **Practical Experiment** | **Lab Experiment** | **Tutorial** | **Project** | **Seminar** | **Presentation** | **Research assignments** | **Case Study analysis** | **Group Discussions** | **Role Play** | **Prototype making** | **Other (Pl explain)** |
| 1 | **Introduction to Data**  **Mining** | LO1 |  | √ |  | √ |  |  |  | √ |  | √ |  |  |  |  |
| LO2 |  | √ |  | √ |  |  |  |  |  |  |  |  |  |  |
| LO3 |  | √ |  | √ |  |  |  |  |  |  | √ |  |  |  |
| 2 | **Knowing Data and Data Preprocessin g** | LO1 |  |  | √ | √ |  |  |  |  |  |  |  |  |  |  |
| LO2 |  |  | √ | √ |  |  |  |  |  |  |  |  |  |  |
| LO3 |  |  | √ | √ |  |  |  |  | √ |  | √ |  |  |  |
| LO4 |  |  | √ | √ |  |  |  |  | √ |  |  |  |  |  |
| LO5 |  |  |  | √ |  |  |  |  |  | √ |  |  |  |  |
| 3 | **Data**  **Warehousing and Data** | LO1 |  | √ | √ | √ |  | √ |  |  | √ |  |  |  |  |  |
| LO2 |  | √ | √ | √ |  | √ |  |  |  |  | √ |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Cube Technology** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | **Mining Frequent Patterns, Associations and**  **Correlations** | LO1 |  | √ | √ | √ |  |  |  |  | √ | √ | √ |  |  |  |
| LO2 |  | √ | √ | √ |  |  |  |  | √ | √ |  |  |  |  |
| 5 | **Classification Basics, Cluster Analysis and Neural Networks** | LO1 |  | √ | √ | √ |  |  |  |  |  |  |  |  |  |  |
| LO2 |  | √ | √ | √ |  |  |  |  |  |  |  |  |  |  |
| LO3 |  | √ | √ | √ |  |  |  |  |  |  |  |  |  |  |

Internal Theory Assessment –

* Unit Tests – 15 Marks each, 3 number, Best 2
* Assignments – 10 Marks each, 2 number Internal Practical Assessment –
  + Journal Completion – 10 Marks
  + Completion of Experiment / Activities – 10 Marks each, 5 number, Best three Term end Practical –
* Viva Voce on internal practical submission – 10 Marks
* Performance in practical experiment / Activity – 20 Marks
* Presentation in viva/experiment – 10 Marks Skill Assessment –
* Completion of Skill Journal – 5 Marks
* Completion of Activities / Projects during Skill Sessions – 10 Marks
* Viva-voce – 5 Marks

## Weightage of Units for Examination

|  |  |
| --- | --- |
| Unit | % weightage |
| 1 | 20 |
| 2 | 20 |
| 3 | 20 |
| 4 | 20 |
| 5 | 20 |

This course on  **Statistics** aims at building the following key competencies amongst the students.

|  |  |  |  |
| --- | --- | --- | --- |
| **Program Name** | **Bachelor Degree in Computer Science and Information Technology** | | |
| **Qualification Pack** | **Statistics-II** | | |
| **Course Name** | **Statistics-II** | **Course Code** |  |
| **Version No** | **1.0** | **Version Update date** |  |
| **Pre-requisite** | * Knowledge of HSC level Mathematics & Statistics-I. | | |
| **Course Outcome** | * **The objectives of this course is to impart knowledge of statistics so that students are able to apply the concepts in understanding and analyzing the engineering and research.** | | |

**The Course Encompasses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Key Learning Outcomes** | **Instructional Objectives** |
| **1** | Random Variables  and Probability Distributions: | The **Students** should be able to:   * LO1: State the meaning random variables * LO2: Analyze different types random variables * LO3: Analyze the discrete probability function * LO4: Analyze the normal probability function |  |
| **2** | Sampling Distributions | The **Students** should be able to:   * LO5: Explain Limit theorems and convergence of random variables; * LO6: Understand and explain Elementary concepts related to stochastic processes |  |
| **3** | Tests of Hypotheses for Single Sample: | The **Students** should be able to:   * LO7: Understand Types of Error, Power of a test, * LO8: Understand and solve Student t and z test related problems; |  |
| **4** | Tests of Hypotheses for two Sample: | The **Students** should be able to:   * LO9: Illustrate difference of two means * LO10: Understand and solve Student t and z test related problems; |  |
| **5** | Time Series Analysis: | The **Students** should be able to:   * LO11: Illustrate the component of Time Series * LO12: Illustrate the utility of Time Series |  |

**Module/Unit wise Syllabus Details**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Detailed Topic wise Syllabus** | **References** |
| **1** | Random Variables  and Probability Distributions: | Random Variables and Their Probability Distributions, Expected Values of Random Variables  Probability Distributions for Discrete and continuous Random Variables, Binomial Probability Distribution, Poisson Probability Distribution, Normal Distribution |  |
| **2** | Sampling Distributions | Sampling Distributions and the Central Limit Theorem, Statistical Intervals for a Single Sample, Statistical Inference for Two Samples |  |
| **3** | Tests of Hypotheses for Single Sample: | Hypothesis, types of hypothesis, level of confidence, level of significance, critical value, decision rule, Testing of hypothesis for large and small samples |  |
| **4** | Tests of Hypotheses for two Sample: | Inference on the Difference in Means of Two  Normal Distributions, Variances Known, Hypothesis Tests on the Difference in Means, Variances Known, Hypotheses Tests on the Difference in Means, Variances Unknown |  |
| **5** | Time Series Analysis: | Introduction, Component of Time Series, Utility of Time Series, Models of TS, Methods for analysis of trends. |  |

**Text Books/Reference Books**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No** | **Title of the Book** | **Author** | **Edition / volume** | **Text (T)**  **Reference (R)** |
| **1.** | fundamentals of probability  and statistics for engineers | T.T. Soong | John Wiley & Sons Ltd |  |
| **2** | probability & statistics for  engineers & scientists | Ronald E. Walpole | Pearson Education International |  |
| **3** | probability and statistics  for engineering  and the sciences | JAY DEVORE | Cengage Learning |  |

Computer Network

course is aimed at imparting candidates for the *Computer Network* and aims at building the following key competencies amongst the Students

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Program Name** | **BTech. Degree in Computer Science and Information Technology** | | | | | | | | | | |
| **Course Name** | **Computer Network** | | | | **Course Code** | | | BTCS04CC43 | | | |
| **Version No** | **2.0** | | | | **Version Update**  **date** | | | **20/06/2018** | | | |
| **Pre-requisite** | -- | | | | | | | | | | |
| **Course Outcome** | On completion of this course, the Students should be able to:   1. Conceptualize and explain the functionality of the difference layers within a network architecture. 2. Analyse the requirements for a given organizational structure and select the most appropriate networking architecture and technologies, subnetting, and routing mechanism. 3. Able to classify network into subnetworks and assignment of IP addresses. 4. Demonstrate the operation of various routing protocols and their performance analysis. 5. Illustrate design and implementation of data-link, transport and   network-layer protocols within a simulated/real networking environment. | | | | | | | | | | |
| **Total Credits /**  **L:T:P:S** | 4 /  1 (Lecture) : 1(Tutorial) : 1(Practical) : 1(Skill) | | | | | | | | | | |
| **Teaching & Examination**  **Scheme** | **Teaching Scheme** | | | | | **Examination Scheme** | | | | | |
| L  15 | T  15 | P  30 | S  15 | | CAT  50 | CAP  40 | | TEE  50 | TEP  40 | SA  20 |

# The Course Encompasses

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr.**  **No.** | **Module/Units** | **Key Learning Outcomes** | **Instructional**  **Activities** |
| **1.** | **Introduction to Computer Networks**  Theory Duration (hh.mm): 03.00  Tutorial Duration (hh.mm):03.00  Practical Duration (hh.mm): 12.00  Skill Duration (hh.mm): 03.00 | The **Students** should be able to:   * LO1: Understand and explain data communication and networking. * LO2: Define the components of data communication. * LO3: Identify the types of data exchange. * LO4: Explain the idea of network models and the OSI model. * LO5: Explain the concept of protocol layering and the TCP/IP protocol suite. * LO6: Measure the performance of data   transmission. |  |
| **2.** | **Data Link Layer** | The **Students** should be able to: |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Theory Duration (hh.mm): 03.00  Tutorial Duration (hh.mm):03.00  Practical Duration (hh.mm): 12.00  Skill Duration (hh.mm): 03.00 | * LO1: Explain the concept of links and nodes, and services provided by the data-link layer. * LO2: Define the two categories of links: point-to-point and broadcast links. * LO3: Explain the framing and flow control at data link layer. * LO4: Explain the protocols at link layer. * LO5: Explain the concept of Medium Access Control sublayer of DLL> |  |
| **3.** | **Network layer**  Theory Duration (hh.mm): 03.00  Tutorial Duration (hh.mm):03.00  Practical Duration (hh.mm): 12.00  Skill Duration (hh.mm): 03.00 | The **Students** should be able to:   * LO1: Introduce the network layer by defining services provided by the layer. * LO2: Explain packet switching that occurs at the network layer. * LO3: Explain and measure network layer performance. * LO4: Explain subnetting and super netting concepts. * LO5: Understanding delivery, forwarding and   routing concepts. |  |
| **4.** | **Transport Layer** | The **Students** should be able to:   * LO1: Introduce the idea and general services required from the transport-layer protocols. * LO2: Explain the two categories of the transport-layer protocols: connectionless and connection-oriented. * LO3: Explain the design of transport-layer protocols in the internet: UDP and TCP. * LO4: Explain concepts of Congestion Control. |  |
|  | Theory Duration (hh.mm): |
|  | 03.00 |
|  | Tutorial Duration |
|  | (hh.mm):03.00 |
|  | Practical Duration (hh.mm): |
|  | 12.00 |
|  | Skill Duration |
|  | (hh.mm): 03.00 |
| **5.** | **Application Layer** | The **Students** should be able to:   * LO1: Introduce the application layer and describe the services provided by the application layer. * LO2: Explain the two paradigms in which hosts in the Internet can exchange services: client-server and peer-to-peer paradigms. * LO3: Introduce the various application layer protocols and their services. * LO4: Explain the client-server programming, the way in which the client-server paradigm   can be implemented. |  |
|  | Theory Duration (hh.mm): 01.00  Tutorial Duration (hh.mm):01.00  Practical Duration (hh.mm): 04.00  Skill Duration (hh.mm): 01.00 |

**Module/Unit wise Syllabus Details**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Module/Units** | **Detailed Topic-wise Syllabus** | **Total Hours**  **(L+T+P+S)** |

|  |  |  |  |
| --- | --- | --- | --- |
| **1.** | **Introduction to Computer Networks** | Data Communications, Protocol layers and service models. OSI and Internet protocols, Addressing mechanisms, Internetworking devices, Network  Topology, Transmission media, Multiplexing. | 3+3+12+3 |
| **2.** | **Data-Link Layer** | Data Link layer Design Issues – Flow Control and ARQ techniques. Link layer Services – Framing – Error Detection – Flow control, Data link Protocols – Noisy and noiseless channels, HDLC.  MAC Sub layer – IEEE 802 FOR LANs & MANs, CSMA/CD,  CSMA/CA | 3+3+12+3 |
| **3.** | **Network Layer** | Network layer in internet. IPv4 - IP Addressing – Classless and Classfull Addressing, Sub-netting, IPv6 Addressing.  Delivery, Forwarding and Routing Shortest path routing, Flooding, Distance Vector Routing, Link  State Routing, RIP, OSPF. | 3+3+12+3 |
| **4.** | **Transport Layer** | Introduce the idea and general services required from the transport layer such as process-to- process communication, addressing, multiplexing and demultiplexing, error, flow, and congestion  control. Transport Layer protocols– TCP & UDP | 3+3+12+3 |
| **5.** | **Application Layer** | Introduce the idea of the application layer, whereby the whole Internet, hardware and software was designed and developed to provide services at the layer. Application layer protocols–FTP, DNS, Electronic mail, MIME, SNMP. Introduction to  World Wide Web. | 3+3+12+3 |

**Learning Resources**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Module/Unit** | **Text Books** | **Reference Book/Paper/Article/ Online**  **Resource (link)/Other** |
| 1. | Introduction to  Computer Networks | Behrouz A. Forouzan, Data Communications  and Networking, 5th Ed., McGraw-Hill Education, 2013. | Kurose, J. and Ross, K., Computer Networking: A Top- Down Approach, 7th Ed., Pearson, 2017. |
| 2. | Physical Layer |
| 3. | Data-Link Layer |
| 4. | Network Layer |
| 5. | Transport Layer |
| 6. | Application Layer |
| 7. | Network Security |

**Assessment Matrix**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr. No**  **.** | **Module/ Unit** | **Learning Outcome** | **Written Test** | **Practical Experiment** | **Lab Experiment** | **Tutorial** | **Project** | **Seminar** | **Presentation** | **Research assignments** | **Case Study analysis** | **Group Discussions** | **Role Play** | **Prototype making** | **Other (Pl explain)** |
|  |  | LO1: Understand |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | and explain data  communication | √ | √ | √ | √ |
|  |  | and networking. |  |  |  |  |
|  |  | LO2: Define the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | components of  data | √ | √ | √ | √ |
|  |  | communication. |  |  |  |  |
|  |  | LO3: Identify the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Introducti** | types of data | √ | √ | √ | √ |
| **1** | **on to**  **Computer** | exchange. |  |  |  |  |
| LO4: Explain the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Networks** | idea of network  models and the | √ | √ | √ | √ |
|  |  | OSI model. |  |  |  |  |
|  |  | LO5: Explain the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | concept of  protocol layering | √ | √ | √ | √ |
|  |  | and the TCP/IP |  |  |  |  |
|  |  | protocol suite. |  |  |  |  |
|  |  | LO6: Measure the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | performance of | √ | √ | √ | √ |
|  |  | data transmission. |  |  |  |  |
|  |  | LO1: Explain the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | concept of links |  |  |
|  |  | and nodes, and  services provided | √ | √ |
|  |  | by the data-link |  |  |
|  |  | layer. |  |  |
|  |  | LO2: Define the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | two categories of |  |  |
| **2** | **Data-Link**  **Layer** | links: point-to-  point and | √ | √ |
|  |  | broadcast links. |  |  |
|  |  | LO3: Explain the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | framing and flow  control at data link | √ | √ |
|  |  | layer. |  |  |
|  |  | LO4: Explain the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | protocols at link | √ | - |
|  |  | layer. |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | LO5: Explain the concept of Medium Access Control sublayer  of DLL. | √ |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | LO1: Introduce |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | the network layer  by defining | √ | √ | √ |
|  |  | services provided |  |  |  |
|  |  | by the layer. |  |  |  |
|  |  | LO2: Explain |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | packet switching  that occurs at the | √ |
|  |  | network layer. |  |
|  |  | LO3: Explain and |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** | **Network**  **Layer** | measure network layer | √ | √ | √ |
|  |  | performance. |  |  |  |
|  |  | LO4: Explain |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | subnetting and  super netting | √ | √ | √ |
|  |  | concepts. |  |  |  |
|  |  | LO5: |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Understanding  delivery, | √ | √ | √ | √ |
|  |  | forwarding and |  |  |  |  |
|  |  | routing concepts. |  |  |  |  |
|  |  | LO1: Introduce the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | idea and general |  |  |
|  |  | services required  from the | √ | √ |
|  |  | transport-layer |  |  |
|  |  | protocols. |  |  |
|  |  | LO2: Explain the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | two categories of |
|  |  | the transport- |
|  |  | layer protocols: |
| **4** | **Transport Layer** | connectionless  and connection-  oriented. |
|  |  | LO3: Explain the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | design of |  |  |
|  |  | transport-layer  protocols in the | √ | √ |
|  |  | internet: UDP and |  |  |
|  |  | TCP. |  |  |
|  |  | LO4: Explain |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | concepts of  Congestion | √ | √ | √ |
|  |  | Control. |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | LO1: Introduce |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | the application |  |  |
|  |  | layer and describe  the services | √ | - |
|  |  | provided by the |  |  |
|  |  | application layer. |  |  |
|  |  | LO2: Explain the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | two paradigms in |  |  |
|  |  | which hosts in the |  |  |
|  |  | Internet can  exchange services: | √ | √ |
|  |  | client-server and |  |  |
| **5** | **Applicati**  **on Layer** | peer-to-peer  paradigms. |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | LO3: Introduce the |
|  |  | various |
|  |  | application layer |
|  |  | protocols and |
|  |  | their services. |
|  |  | LO4: Explain the |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | client-server |  |  |  |
|  |  | programming, the |  |  |  |
|  |  | way in which the | √ | √ | √ |
|  |  | client-server |  |  |  |
|  |  | paradigm can be |  |  |  |
|  |  | implemented. |  |  |  |

**Evaluation System**

|  |  |
| --- | --- |
| Description | Allotted marks |
| Internal Theory | 50 |
| Internal Practical | 40 |
| Term end Theory | 50 |
| Term end Practical | 40 |
| Skill Assessment | 20 |
| TOTAL | 200 |

Internal Theory Assessment –

* Unit Tests – 10 Marks each, 5 number, Best three
* Assignments – 10 Marks each, 2 number

Internal Practical Assessment –

* Journal Completion – 10 Marks
* Completion of Experiment / Activities – 10 Marks each, 5 number, Best three Term end Practical –
* Viva Voce on internal practical submission – 10 Marks
* Performance in practical experiment / Activity – 20 Marks
* Presentation in viva / experiment – 10 Marks

Skill Assessment –

* Completion of Skill Journal – 5 Marks
* Completion of Activities / Projects during Skill Sessions – 10 Marks
* Viva voce – 5 Marks

# Weightage of Units for Examination

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Module/Unit** | **% Weightage** |
| 1. | Introduction to Computer Networks | **20** |
| 2. | Data-Link Layer | **20** |
| 3. | Network Layer | **20** |
| 4. | Transport Layer | **20** |
| 5. | Application Layer | **20** |

**Teaching Plan (Classroom Lectures)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Session Number** | **Module/Unit** | **Topic** | **Week Number** |
| 1 | Introduction to Computer  Networks | Data Communications, Protocol layers and service models. | Week 1 |
| 2 | Introduction to  Computer Networks | OSI and Internet protocols, Addressing mechanisms, | Week 2 |
| 3 | Introduction to Computer  Networks | Internetworking devices, Network Topology, Transmission media, Multiplexing. | Week 3 |
| 4 | Data-Link Layer | Data Link layer Design Issues – Flow Control and  ARQ techniques. | Week 4 |
| 5 | Data-Link Layer | Link layer Services – Framing – Error Detection – Flow control, Data link Protocols – Noisy and  noiseless channels, HDLC. | Week 5 |
| 6 | Data-Link Layer | MAC Sub layer – IEEE 802 FOR LANs & MANs,  CSMA/CD, CSMA/CA | Week 6 |
| 7 | Network Layer | Network layer in internet. IPv4 - IP Addressing  – Classless and Classfull Addressing, | Week 7 |
| 8 | Network Layer | Sub-netting, IPv6 Addressing.  Delivery, Forwarding and Routing Shortest path routing, | Week 8 |

|  |  |  |  |
| --- | --- | --- | --- |
| 9 | Network Layer | Flooding, Distance Vector Routing, Link State  Routing, RIP, OSPF. | Week 9 |
| 10 | Transport Layer | Introduce the idea and general services required from the transport layer such as process-to-process communication,  addressing. | Week 10 |
| 11 | Transport Layer | Multiplexing and demultiplexing, error, flow  and error control | Week 11 |
| 12 | Transport Layer | Congestion control. Transport Layer  protocols– TCP & UDP | Week 12 |
| 13 | Application Layer | Introduce the idea of the application layer, whereby the whole Internet, hardware and  software was designed and developed to provide services at the layer. | Week 13 |
| 14 | Application Layer | Application layer protocols–FTP, DNS, Electronic mail, MIME, SNMP. Introduction to World Wide  Web. | Week 14 |
| 15 | Application Layer | Application layer protocols–FTP, DNS, Electronic mail, MIME, SNMP. Introduction to World Wide  Web. | Week 15 |

**Practical Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session Number** | **Modul e/Unit** | **Description of Experiments** | **Equipment/Tools** | **Week Number** |
| 1 | 1 | Basic Networking Commands | Cisco Packet Tracer | Week 1 |
| 2 | 1 | Network Capturing: Through Wireshark | Wireshark | Week 1 |
| 3 | 1 | Network Capturing: Through Wireshark | Wireshark | Week 2 |
| 4 | 1 | Study of different types of Network Cables, and Practically Implement the  cross wired and straight through cable. | Cisco Packet Tracer | Week 2 |
| 5 | 1 | Study of different types of Network  Cables, and Practically Implement the cross wired and straight through cable. | Cisco Packet Tracer | Week 3 |
| 6 | 1 | Understanding Network Devices on  Cisco Packet Tracer | Cisco Packet Tracer | Week 3 |
| 7 | 2 | Network Configuration-Point to point | Cisco Packet Tracer | Week 4 |
| 8 | 2 | Network Configuration -Multipoint | Cisco Packet Tracer | Week 4 |
| 9 | 2 | Packet switching and network-layer  protocols (IPv4 and ICMPv4 protocols). | Cisco Packet Tracer | Week 5 |
| 10 | 2 | Packet switching and network-layer  protocols (IPv4 and ICMPv4 protocols). | Cisco Packet Tracer | Week 5 |
| 11 | 2 | Physical Addressing MAC Address | Cisco Packet Tracer | Week 6 |
| 12 | 2 | Physical IPv6 Addressing | Cisco Packet Tracer | Week 6 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 13 | 3 | Subnetting in networks-IPv4 | Cisco Packet Tracer | Week 7 |
| 14 | 3 | Subnetting in networks-IPv4 | Cisco Packet Tracer | Week 7 |
| 15 | 3 | Unicast and multicast routing. | Cisco Packet Tracer | Week 8 |
| 16 | 3 | IPv6- Dual stack configuration | Cisco Packet Tracer | Week 8 |
| 17 | 3 | Configuration of Routers and Routing  protocols-RIP, OSPF, BGP etc. | Cisco Packet Tracer | Week 9 |
| 18 | 3 | Configuration of Routers and Routing  protocols-RIP, OSPF, BGP etc. | Cisco Packet Tracer | Week 9 |
| 19 | 4 | Configuration of Transmission Control  Protocol (TCP ) | Cisco Packet Tracer | Week 10 |
| 20 | 4 | Configuration of User DP Protocol | Cisco Packet Tracer | Week 10 |
| 21 | 4 | Configuration of SCTP Protocol | Cisco Packet Tracer | Week 11 |
| 22 | 4 | Firewall Implementation, Router Access Control List (ACL) | Cisco Packet Tracer | Week 11 |
| 23 | 4 | Packet capture and header analysis by  wire-shark (TCP,UDP,IP) | Cisco Packet Tracer | Week 12 |
| 24 | 4 | Packet capture and header analysis by  wire-shark (TCP,UDP,IP) | Wireshark | Week 12 |
| 25 | 5 | DNS, Web, DHCP, FTP server configuration | Cisco Packet Tracer | Week 13 |
| 26 | 5 | DNS, Web, DHCP, FTP server configuration | Cisco Packet Tracer | Week 13 |
| 27 | 5 | DNS, Web, DHCP, FTP server configuration | Cisco Packet Tracer | Week 14 |
| 28 | 5 | Application-layer protocols: HTTP, FTP,  SMPT, POP, TELNET, and DNS | Cisco Packet Tracer | Week 14 |
| 29 | 5 | Application-layer protocols: HTTP, FTP,  SMPT, POP, TELNET, and DNS | Cisco Packet Tracer | Week 15 |
| 30 | 5 | Application-layer protocols: HTTP, FTP,  SMPT, POP, TELNET, and DNS | Cisco Packet Tracer | Week 15 |

**Tutorial Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Session Number** | **Module/ Unit** | **Description of Tutorial** | **Equipment/Tools** | **Week Numb er** |
| 1 | 1 | Tutorial 1:  Network topologies and TCP/IP protocol. | Cisco Packet Tracer | Week 1 |
| 2 | 1 | Tutorial 2:  Analog and digital signals conversion. | * Cisco Packet Tracer | Week 2 |
| 3 | 1 | Tutorial 3:  Data transmission and multiplexing. | * Cisco Packet Tracer * Mathlab/Simulink | Week 3 |
| 4 | 2 | Tutorial 4:  Data-link layers: point-to-point and broadcast links, Error detection and correction. | * Cisco Packet Tracer * Mathlab/Simulink | Week 4 |
| 5 | 2 | Tutorial 5:Data Link Control (DLC), Multiple Access Control (MAC). | * Cisco Packet Tracer * Mathlab/Simulink | Week 5 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 6 | 2 | Tutorial 6:  Ethernet protocol and Virtual LANs. | * Cisco Packet Tracer * Mathlab/Simulink | Week 6 |
| 7 | 3 | Tutorial 7:  Packet switching and network-layer protocols (IPv4 and IPv6protocols). | * Cisco Packet Tracer * Mathlab/Simulink | Week 7 |
| 8 | 3 | Tutorial 8:  Subnetting Numericals | * Cisco Packet Tracer * Mathlab/Simulink | Week 8 |
| 9 | 3 | Tutorial 9:  Unicast and multicast routing. | Cisco Packet Tracer | Week  9 |
| 10 | 4 | Tutorial 10:  Transport-layer protocols: UDP, TCP, and  SCTP. | Cisco Packet Tracer | Week 10 |
| 11 | 4 | Tutorial 11:  Transport-layer protocols: UDP, TCP, and SCTP. | Cisco Packet Tracer | Week 11 |
| 12 | 4 | Tutorial 12:  Congestion control Mechanisms . | Cisco Packet Tracer | Week 12 |
| 13 | 5 | Tutorial 13:  Simple Network Management Protocol (SNMP) and P2P (peer-to-peer) network. | Cisco Packet Tracer | Week 13 |
| 14 | 5 | Tutorial 14:  Simple Network Management Protocol  (SNMP) and P2P (peer-to-peer) network. | Cisco Packet Tracer | Week 14 |
| 15 | 5 | Tutorial 14:  Voice over IP, VoIP application development. | Cisco Packet Tracer | Week 15 |

**Skill Plan**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sessi on Num ber** | **Module**  **/Unit** | **Description of Activity** | **Equipment/Tools** | **Week Number** |
| 1 | 1 | Skill activity 1: | Cisco Packet Tracer | Week 1 |
| 2 | 1 | Skill activity 2:  Configure and simulate: signals conversion (analog/digital) | * Cisco Packet Tracer | Week 2 |
| 3 | 1 | Skill activity 3: | * Cisco Packet Tracer | Week 3 |

|  |  |  |  |  |
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|  |  | Configure and simulate: data transmission and multiplexing. |  |  |
| 4 | 2 | Skill activity 4:  Configure and simulate: data-link layers: point-to- point and broadcast links, error detection and  correction. | * Cisco Packet Tracer | Week 4 |
| 5 | 2 | Skill activity 5:  Configure and simulate: Data Link Control (DLC), Multiple Access Control (MAC) | * Cisco Packet Tracer | Week 5 |
| 6 | 2 | Skill activity 6:  Configure and simulate: Ethernet protocols, Virtual LANs. | * Cisco Packet Tracer | Week 6 |
| 7 | 3 | Skill activity 7:  Configure and Analyze headers of protocols:   * IPv4 and IPv6. | * Cisco Packet Tracer * Wireshark | Week 7 |
| 8 | 3 | Skill activity 8:  Configure and simulate: Packet switching, network- layer protocols: IPv4 and ICMPv4 protocols | * Cisco Packet Tracer * Wireshark | Week 8 |
| 9 | 3 | Skill activity 9:  Configure and simulate: unicast routing, multicast routing. | Cisco Packet Tracer | Week 9 |
| 10 | 4 | Skill activity 10:  Configure and simulate:  Configure and Analyze headers of protocols:   * TCP and UDP. | Cisco Packet Tracer | Week 10 |
| 11 | 4 | Skill activity 11: Configure and simulate:   * DHCP and SCTP | Cisco Packet Tracer | Week 11 |
| 12 | 4 | Skill activity 12:  Configure and simulate:   * Connection less and connection oriented services. | Cisco Packet Tracer | Week 12 |
| 13 | 5 | Skill activity 13:  Configure and simulate: application-layer protocols: HTTP, FTP, SMPT, POP, and TELNET | Cisco Packet Tracer | Week 13 |
| 14 | 5 | Skill activity 14:  Configure and simulate: DNS and Simple Network Management Protocol (SNMP) and P2P (peer-to- peer) network. | Cisco Packet Tracer | Week 14 |
| 15 | 5 | Skill activity 15: Project Work  Develop a network with all the facilities discussed above. | Cisco Packet Tracer | Week 15 |

**Application Development Framework using .NET**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Program**  **Name** | **B.Tech. in Computer Science & Information Technology** | | | | | | | | | | |
| **Course**  **Name** | **Application Development**  **Framework using .NET** | | | | **Course Code** | | | BTCS04CC44 | | | |
| **Version No** | **1.0** | | | | **Version Update date** | | |  | | | |
| **Pre- requisite** | * **Student must know basic knowledge in C, C++, Java Script, HTML, CSS** * **Student need to learn C#** * **Knowledge of object oriented programming language** * **Knowledge of handling SQL database.** | | | | | | | | | | |
| **Course Outcome** | 1. Appreciate the concepts underlying .NET framework. 2. Understand the concepts and architecture behind .NET framework 3. Get the idea about the various elements involved in .NET 4. Features of C#/VB and object oriented concepts using these languages. 5. Event handling model and advance features of C# /VB 6. Event Understanding ASP framework for development of WEB applications. 7. Get the concepts forms and controls available in ASP. 8. Understanding ADO .NET for database handling. 9. Developing Data view components in user interface. 10. Connecting to SQL data source and integrating databases with applications. 11. Appreciate the concepts of using XML in web page designing. 12. Grasp the concepts document object model. 13. Understand Language Integrated query. | | | | | | | | | | |
| **Total Credits / L:T:P:S** | 5/2(Lectures):0:2(Practical):1(Skill) | | | | | | | | | | |
| **Teaching & Examination Scheme** | **Teaching Scheme** | | | | | **Examination Scheme** | | | | | |
|  | L 30 | P 60 | T 0 | S 15 | | CAT 0 | CAP 40 | | TEE 0 | TEP  40 | SA 20 |

**The Course Encompasses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Key Learning Outcomes** | **Instructional Activities** |
| **1.** | **Overview of the**  **.NET**  Theory Duration (06 HR):  Practical Duration (12 HR): | * LO1: Appreciate the concepts underlying .NET framework. * L02:Understand the concepts and architecture behind .NET framework * L03: Different Languages used in Asp.Net. * L04:Get the idea about the various elements involved in   .NET | To have clear understanding of  .NET framework |
| **2.** | **Coding Standards** Theory Duration (06:00):  Practical Duration (12.00): | * L01: Features of C#/VB and object oriented concepts using these languages. * L02: Overview of coding standards follows during programming * L03:Event handling model and advance features of C# /VB | To have clear comprehension on programming C# & VB |
| **3.** | **Asp.Net Standard Controls**  Theory Duration (06:00):  Practical Duration (12.00): | * L01: Understanding ASP framework for development of WEB applications. * L02: Accepting User Input * L03: Designing Websites with master pages * L04: Understanding forms and   controls available in ASP. | To be able to analysis ASP.NET Coding Standard Controls. |
| **4.** | **Overview of Data Access**  Theory Duration (06:00):  Practical Duration (12.00): | * L01: Understanding ADO   .NET for database handling.   * L02: Developing Data view components in user interface. * L03: Connecting to SQL data source and integrating databases with applications. * L04: Connecting to MSSQL Server and MS Access | To have a knowledge of  ADO database Handling |
| **5.** | **Working with XML and Web Services**  **,LINQ**  Theory Duration (06:00): | * L01: Appreciate the concepts of using XML in web page designing. * L02: Understanding document object model. * L03: Understanding Language Integrated Query | To have a basic knowledge of XML  ,Integrated Query and Ajax |

|  |  |  |  |
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|  | Practical Duration (12:00): | * L04: Setting up and implementing Ajax * L05:Deploying application on Web Server |  |

**Syllabus**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Detailed Topic wise Syllabus (In bullet points)** | **Total Hours (L +T+P+ S)** | **Total Sessions (Contact**  **hours)** |
| **1** | **Overview of the**  **.NET:**  Theory Duration (06.00): | * Introduction .NET framework * Features of .Net framework * Architecture and component of   .Net   * Elements of .Net. | Lecture/Theory Duration (hh.mm): 06.00 Practical Duration (hh.mm): 12:00  Skill Duration (hh.mm): 03.00 | 21 Hours SSC/Q0508 |
| **2** | **Coding Standards:** Theory Duration (06.00): | * Form creation using controls and event handling model. * Understanding C# * VB and ASP interfaces in   .NET framework. | Lecture/Theory Duration (hh.mm): 06.00 Practical Duration (hh.mm): 12:00  Skill Duration (hh.mm): 03.00 | 21 Hours SSC/Q0509 |
| **3** | **Asp.Net Standard Controls:** Theory Duration (06.00): | * Using ASP for generating web application. * Understanding ASP framework for development of WEB applications. | Lecture/Theory Duration (hh.mm): 06.00 Practical Duration (hh.mm): 12:00  Skill Duration  (hh.mm): 03.00 | 21 Hours SSC/Q6702 |
| **4** | **Overview of Data Access:** Theory Duration (06.00): | * Experiment to connect to SQL data source and integrating databases with applications * Connecting database using ADO libraries * Developing Data view components in user interface. | Lecture/Theory Duration (hh.mm): 06.00 Practical Duration (hh.mm): 12:00  Skill Duration  (hh.mm): 03.00 | 21 Hours SSC/Q0503 |
| **5** | **Working with XML and Web Services ,LINQ:** | * XML: Introducing XML, Structure * Syntax of XML | Lecture/Theory Duration (hh.mm): 06.00 | 21 Hours  SSC/Q0502 |

|  |  |  |  |  |
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|  | Theory Duration (06.00): | * Document type definition (DTD) * XML Schema * Document object model * Language Integrated Query | Practical Duration (hh.mm): 12:00  Skill Duration  (hh.mm): 03.00 |  |

**Learning Resources**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module / Unit** | **Text Books** | **Reference Book / Paper / Article**  **/ Online Resource (link) / Other** |
| **1** | **Overview of the .NET:** | **Programming in C#- TMH, Balagurusamy** |  |
| **2** | **Coding Standards:** | **C# for Programmers -Harvey Deitel, Paul Deitel , Pearson Education** |  |
| **3** | **Asp.Net Standard Controls:** | **Web Programming - Chris Bates, Wiley** |  |
| **4** | **Overview of Data Access:** | **ASP .Net Complete Reference - McDonald, TMH.** |  |
| **5** | **Working with XML and Web Services ,LINQ:** | **C# for Programmers -Harvey Deitel, Paul Deitel , Pearson Education.** |  |

**Assessment Matrix**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr**  **. N**  **o** | **Module/U nit** | **Learning Outcome ID** | **Learning Outcome** | **Written Test** | **Practical Experiment** | **Lab Experiment** | **Tutorial** | **Project** | **Seminar** | **Presentation** | **Research assignments** | **Case Study analysis** | **Group Discussions** | **Role Play** | **Prototype making** | **Other (Pl explain)** |
|  | **Overview** | LO1 | Appreciate |  | ✓ |  |  | ✓ | ✓ | ✓ |  |  |  |  |  |  |
| 1 | **of the** |  | the |  |  |  |  |
|  | **.NET** |  | concepts  underlying |  |  |  |  |
|  |  |  | .NET |  |  |  |  |
|  |  |  | framework. |  |  |  |  |
|  |  | LO2 | Understand |  | ✓ |  | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |
|  |  |  | the |  |  |  |  |  |
|  |  |  | concepts |  |  |  |  |  |
|  |  |  | and |  |  |  |  |  |
|  |  |  | architectur |  |  |  |  |  |
|  |  |  | e behind |  |  |  |  |  |
|  |  |  | .NET |  |  |  |  |  |
|  |  |  | framework |  |  |  |  |  |
|  |  | LO3 | Get the |  | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |  |  |
|  |  |  | idea about |  |  |  |  |
|  |  |  | the various |  |  |  |  |
|  |  |  | elements |  |  |  |  |
|  |  |  | involved in |  |  |  |  |
|  |  |  | .NET |  |  |  |  |
|  |  | L04 | Get the |  |  | ✓ | ✓ | ✓ |  |  |  |  |  |  |  |  |
|  |  | idea about |  |  |  |
|  |  | the various |  |  |  |
|  |  | elements |  |  |  |
|  |  | involved in |  |  |  |
|  |  | .NET |  |  |  |
|  |  | LO1 | Features of |  | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |  |  |
| 2 | **Coding** |  | C#/VB and |  |  |  |  |
|  | **Standard** |  | object |  |  |  |  |
|  | **s** |  | oriented  concepts |  |  |  |  |
|  |  |  | using these |  |  |  |  |
|  |  |  | languages. |  |  |  |  |
|  |  | LO2 | Event |  | ✓ | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |  |
|  |  |  | handling |  |  |  |  |  |
|  |  |  | model and |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | advance features of C# /VB |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | L03 | Event handling model and advance features of  C# /VB |  | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |  |  |
|  |  | LO1 | Event |  | ✓ | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |  |
| 3 | **Asp.Net** | . | Understand |  |  |  |  |  |
|  | **Standard** |  | ing ASP |  |  |  |  |  |
|  | **Controls** |  | framework  for |  |  |  |  |  |
|  |  |  | developme |  |  |  |  |  |
|  |  |  | nt of WEB |  |  |  |  |  |
|  |  |  | applications |  |  |  |  |  |
|  |  |  | . |  |  |  |  |  |
|  |  | LO2 | Accepting |  | ✓ | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |  |
|  |  |  | User Input |
|  |  | L03 | Designing |  | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |  |  |
|  |  | Websites |  |  |  |  |
|  |  | with master |  |  |  |  |
|  |  | pages |  |  |  |  |
|  |  | L04 | Understand |  | ✓ |  |  | ✓ |  |  |  |  |  |  |  |  |
|  |  | ing forms  and |  | ✓ | ✓ |  |
|  |  | controls |  |  |  |  |
|  |  | available in |  |  |  |  |
|  |  | ASP. |  |  |  |  |
| 4 | **Overview of Data Access** | LO1 | Understand ing ADO  .NET for database handling. |  | ✓ |  | ✓ | ✓ | ✓ |  |  |  |  |  |  |  |
| LO2 | Developing Data view component s in user interface. |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |
| LO3 | Connecting  to SQL data |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | source and integrating databases with applications  . |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | L04 | Connecting to MSSQL  Server and  MS Access |  | ✓ | ✓ | ✓ |  | ✓ |  |  |  |  |  |  |  |
|  |  | LO1 | Appreciate the concepts of using XML in web page designing. |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |
| 5 | **Working** | . |  |  |  |  |  |  |
|  | **with XML** |  |  |  |  |  |  |  |
|  | **and Web** |  |  |  |  |  |  |  |
|  | **Services** |  |  |  |  |  |  |  |
|  | **,LINQ** |  |  |  |  |  |  |  |
|  |  | LO2 | Understand |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |  |  |  |  |  |
|  |  |  | ing |  |  |  |  |  |  |
|  |  |  | document |  |  |  |  |  |  |
|  |  |  | object |  |  |  |  |  |  |
|  |  |  | model. |  |  |  |  |  |  |
|  |  | L03 | Understand |  | ✓ | ✓ | ✓ |  | ✓ |  |  |  |  |  |  |  |
|  |  |  | ing |  |  |  |  |
|  |  |  | Language |  |  |  |  |
|  |  |  | Integrated |  |  |  |  |
|  |  |  | Query |  |  |  |  |
|  |  | L04 | Setting up |  | ✓ | ✓ | ✓ |  | ✓ |  |  |  |  |  |  |  |
|  |  |  | and |  |  |  |  |
|  |  |  | implementi |  |  |  |  |
|  |  |  | ng Ajax |  |  |  |  |
|  |  | L05 | Deploying |  | ✓ | ✓ |  | ✓ |  |  |  |  |  |  |  |  |
|  |  |  | application |  |  |  |
|  |  |  | on Web |  |  |  |
|  |  |  | Server |  |  |  |

**Evaluation System**

|  |  |
| --- | --- |
| Description | Allotted marks |
| Internal Theory | 50 |
| Internal Practical | 40 |
| Term end Theory | 50 |
| Term end Practical | 40 |
| Skill Assessment | 20 |
| TOTAL | 200 |

Internal Theory Assessment –

* Assignments – 10 Marks each, 2 number Internal Practical Assessment –
* Journal Completion – 10 Marks
* Completion of Experiment / Activities – 10 Marks each, 5 number, Best three Term end Practical –
* Viva Voce on internal practical submission – 10 Marks
* Performance in practical experiment / Activity – 20 Marks
* Presentation in viva / experiment – 10 Marks Skill Assessment –
* Completion of Skill Journal – 5 Marks
* Completion of Activities / Projects during Skill Sessions – 10 Marks
* Viva voce – 5 Marks

# Weightage of Units for Examination

|  |  |
| --- | --- |
| **Unit** | **% weightage** |
| **Overview of the .NET:** | **20** |
| **Coding Standards:** | **20** |
| **Asp.Net Standard Controls:** | **20** |
| **Overview of Data Access:** | **20** |
| **Working with XML and Web Services**  **,LINQ:** | **20** |

Weekly Class Room Lecture Plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Module/Unit | Topic | Session | Text Book Chapter |
| Week 1 | **Overview of the .NET:** | Appreciate the concepts underlying  .NET framework.  Get the idea about the various elements involved in .NET | 1,2 | **Harvey Deitel, Paul Deitel,P** |

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|  |  |  |  | **earson Educatio**  **n** |
| Week 2 | **Overview of the .NET:** | Understand the concepts and architecture behind .NET framework | 3,4 | **Harvey Deitel,** |
|  |  |  |  | **Paul** |
|  |  |  |  | **Deitel,P** |
|  |  |  |  | **earson** |
|  |  |  |  | **Educatio** |
|  |  |  |  | **n** |
| Week 3 | **Overview of the .NET:** | Get the idea about the various elements involved in .NET | 5,6 | **Harvey Deitel,** |
|  |  |  |  | **Paul** |
|  |  |  |  | **Deitel,P** |
|  |  |  |  | **earson** |
|  |  |  |  | **Educatio** |
|  |  |  |  | **n** |
| Week 4 | **Coding Standards:** | Features of C#/VB and object oriented concepts using these languages. | 7,8 | **Harvey Deitel,** |
|  |  |  |  | **Paul** |
|  |  |  |  | **Deitel,P** |
|  |  |  |  | **earson** |
|  |  |  |  | **Educatio** |
|  |  |  |  | **n** |
| Week | **Coding** | Event handling model | 9,10 | **Harvey** |
| 5 | **Standards:** |  |  | **Deitel,** |
|  |  |  |  | **Paul** |
|  |  |  |  | **Deitel,P** |
|  |  |  |  | **earson** |
|  |  |  |  | **Educatio** |
|  |  |  |  | **n** |
| Week | **Coding** | Advance features of C# /VB | 11,12 | **Harvey** |
| 6 | **Standards:** |  |  | **Deitel,** |
|  |  |  |  | **Paul** |
|  |  |  |  | **Deitel,P** |
|  |  |  |  | **earson** |
|  |  |  |  | **Educatio** |
|  |  |  |  | **n** |
| Week 7 | **Asp.Net Standard** | Understanding ASP framework for development of WEB applications. | 13,14 | **Harvey Deitel,** |
|  | **Controls:** |  |  | **Paul** |
|  |  |  |  | **Deitel,P** |
|  |  |  |  | **earson** |
|  |  |  |  | **Educatio** |
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| Week 8 | **Asp.Net Standard Controls:** | Understanding Web forms and MVC | 15,16 | **Harvey Deitel, Paul Deitel,P earson Educatio**  **n** |
| Week 9 | **Asp.Net Standard Controls:** | Understanding controls available in ASP. | 17,18 | **Harvey Deitel, Paul Deitel,P earson Educatio**  **n** |
| Week 10 | **Overview of Data Access:** | Understanding ADO .NET for database handling. | 19,20 | **Harvey Deitel, Paul Deitel,P earson**  **Educatio n** |
| Week 11 | **Overview of Data Access:** | Developing Data view components in user interface | 21,22 | **Harvey Deitel, Paul Deitel,P earson Educatio**  **n** |
| Week 12 | **Overview of Data Access:** | Connecting to SQL data source and integrating databases with applications | 23,24 | **Harvey Deitel, Paul Deitel,P earson Educatio**  **n** |
| Week 13 | **Working with XML and Web Services, LINQ** | Appreciate the concepts of using XML in web page designing. | 25,26 | **Harvey Deitel, Paul Deitel,P earson**  **Educatio n** |
| Week 14 | **Working with XML and Web Services, LINQ** | Understanding document object model | 27,28 | **Harvey Deitel, Paul Deitel,P**  **earson** |

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| --- | --- | --- | --- | --- |
|  |  |  |  | **Educatio**  **n** |
| Week  15 | **Working with**  **XML and Web** | Understanding Language Integrated Query | 29,30 | **Harvey**  **Deitel,** |
|  | **Services, LINQ** |  |  | **Paul** |
|  |  |  |  | **Deitel,P** |
|  |  |  |  | **earson** |
|  |  |  |  | **Educatio** |
|  |  |  |  | **n** |

Weekly Laboratory /Practical/Tutorial Plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Module/Unit | Description of Experiments | Session | Equipme nt /Tools |
| Week  1 | **Overview of**  **the .NET:** | .NET Framework – Introduction, Installation  and Environment Setup | 1,2,3,4 |  |
| Week 2 | **Coding Standards:** | C# - Program Structure, C# advance features | 5,6,7,8 |  |
| Week 3 | **Asp.Net Standard**  **Controls:** | ASP.NET - Environment Setup, ASP.NET - Life Cycle, ASP.NET - Event Handling | 9,10,11,12 |  |
| Week 4 | **Asp.Net**  **Standard Controls:** | ASP.NET - Server Controls, ASP.NET - HTML Server | 13,14,15,16 |  |
| Week 5 | **Asp.Net Standard**  **Controls:** | ASP.NET - Basic Controls, ASP.NET – Directives, ASP.NET - Managing State | 17,18,19,20 |  |
| Week  6 | **Overview of**  **Data Access:** | ASP.NET – Validators, ASP.NET - Database  Access | 21,22,23,24 |  |
| Week  7 | **Overview of**  **Data Access:** | ADO.NET, ASP.NET - File Uploading, ASP.NET -  Ad Rotator. | 25,26,27,28 |  |
| Week  8 | **Overview of**  **Data Access:** | ASP.NET - Calendars  , ASP.NET - Multi Views. | 29,30,31,32  , |  |
| Week  9 | **Overview of**  **Data Access:** | ASP.NET - Panel Controls, ASP.NET - Ajax  Control, ASP.NET - Data Sources | 33,34,35,36 |  |
| Week  10 | **Overview of**  **Data Access:** | ASP.NET - Data Binding, ASP.NET - Custom  Controls, ASP.NET - Personalization | 37,38,39,40 |  |
| Week 11 | **Overview of Data Access:** | ASP.NET - Error Handling, ASP.NET - Debugging | 41,42,43,44 |  |
| Week 12 | **Working with XML and Web Services**  **,LINQ** | ASP.NET – LINQ, ASP.NET – Security, ASP.NET -  Data Caching | 45,46,47,48 |  |

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| Week 13 | **Working with XML and Web Services**  **,LINQ** | ASP.NET - Web Services, ASP.NET - Multi Threading, | 49,50,51,52 |  |
| Week 14 | **Working with XML and Web Services**  **,LINQ** | ASP.NET - Configuration | 53,54,55,56 |  |
| Week 15 | **Working with XML and Web Services**  **,LINQ** | ASP.NET - Deployment | 57,58,59,60 |  |

Weekly Skill Session Plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Module/Unit | Topic | Session | Text Book Chapter |
| Week 1 | **Overview of the .NET:** | Envisioning a Roadmap | 1 |  |
| Week 2 | **Overview of the .NET:** | The first step is all about establishing the goals and purposes of the web application. | 2 |  |
| Week 3 | **Overview of the .NET:** | The second step involves identifying the audience for the web application. A proper analytics report has to be prepared with the  following information | 3 |  |
| Week 4 | **Coding Standards:** | Type of Audience, Web Access Capabilities of Audience, Level of Security, Quantitative Audience Stats | 4 |  |
| Week  5 | **Coding**  **Standards:** | Creating a Detailed Functional Specifications or  a Feature Summary Document: | 5 |  |
| Week  6 | **Coding**  **Standards:** | Identifying, Analyzing, and Selecting Third Party  Vendors | 6 |  |
| Week 7 | **Asp.Net Standard Controls:** | Web application development company  ,Merchant account and payment gateway ,SSL certificate providers | 7 |  |
| Week 8 | **Asp.Net**  **Standard Controls:** | Managed Server Provider Server, firewall, network, load balancer equipment provider  ,Fulfillment centers | 8 |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week 9 | **Asp.Net Standard**  **Controls** | Selecting Controls | 9 |  |
| Week 10 | **Overview of Data Access:** | Specifying Web Application Structure and Timeframe | 10 |  |
| Week 11 | **Overview of Data Access:** | Designing Layout and Interface and Wire framing | 11 |  |
| Week 12 | **Overview of Data Access:** | Developing the Web Application with Data Source | 12 |  |
| Week 13 | **Working with XML and Web**  **Services, LINQ** | Testing | 13 |  |
| Week 14 | **Working with**  **XML and Web Services, LINQ** | Deployment | 14 |  |
| Week 15 | **Working with**  **XML and Web Services, LINQ** | Maintenance | 15 |  |

**Course Curriculum Pack Mobile Application Development**

This course is aimed at imparting candidates for the **Mobile Application Development** and aims at building the following key competencies amongst the Students

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Program Name** | **Certificate/Diploma/Advance Diploma/Degree in Computer Science and Information Technology** | | | | | | | | | | | | |
| **Course Name** | **Mobile Application Development** | | | | | **Course Code** | | | | | BTCS04CC45 | | |
| **Version No** | **1.0** | | | **Version Update date** | | | | |  | | | | |
| **Pre- requisite** | * **Basic Java Fundamentals** * **Objective C Fundamentals** * **Java Annotations and IO** * **Generics and Collection Classes** * **Apple's Xcode IDE.** * **UI and UX design experience** | | | | | | | | | | | | |
| **Course Outcome** | * Use the development tools in the Android development environment * Use the major components of Android API set to develop their own apps * Describe the life cycles of Activities, Applications and Fragments * Use the Java programming language to build Android apps * Make UI-rich apps using all the major UI components * Know UI best-practices * Be familiar with new UI components like Fragments and the Action Bar * Store and manipulate data using Content Providers, Shared Preferences and Notifications * Do background processing with Services and Async Tasks | | | | | | | | | | | | |
| **Total**  **Credits / L:T:P:S** | 4/1:1:1:1 | | | | | | | | | | | | |
| **Teaching & Examinati**  **on Scheme** | **Teaching Scheme** | | | | | | **Examination Scheme** | | | | | | |
|  | **L 15** | **T 15** | **P 15** | | **S 15** | | CAT 50 | CAP 40 | | TEE 50 | | TEP 40 | SA 20 |

## The Course Encompasses

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Key Learning Outcomes** | **Instructional Objectives** |
| **1** | **Understanding the Android Application Development Framework**  Theory Duration (06 HR):  Practical Duration (12 HR): | The **Students** should be able to:   * LO1: Differentiate various Mobile operating Systems, key features and benefits. * LO2: Identify key features for various versions of Android. * LO3: Identify the various tools and software required for developing an Android Application. * L04: Install Java configure Android development framework. * L05: Create Android Virtual Devices. * L06: Identify the components of an Android Project |  |
| **2** | **Creating Android Projects** | The **Students** should be able to:   * LO1: create Android Project. * LO2: Identify and understand features of system libraries and files related to the installed framework. * LO3: understand and link activities and intents, apply Styles and themes to activities. * LO4: Use Menus, Helper Methods, Options Menu and Context Menu, Understand basics of working with Android camera |  |
|  | Theory Duration (06 HR):  Practical Duration (12 HR): |
| **3** | **Data Handling , Messaging and Networking** Theory Duration (06 HR):  Practical Duration (12 HR): | The **Students** should be able to:   * LO1: Use implementing Data Persistence , using Database * LO2: bundling Database with Application , using Content Providers and resolve to provide an interface to the app’s data |  |
|  | Practical Duration (hh.mm): 05.00 | * LO3: downloading Text Files, Binary Data, Accessing Web Services, .performing Asynchronous Call |
| **4** | **Location Based Services**  **Application Testing & debug** | The Students should be able to:   * LO1: understanding the MAP concept for Android and creating a MAP Project. * LO2: navigating to specific locations * LO3: testing Android Application using Unit Testing. * LO4: troubleshoot and debug code. * LO5: UI Testing. |  |
|  | Theory Duration (06 HR):  Practical Duration  (12 HR): |

|  |  |  |  |
| --- | --- | --- | --- |
| **5** | **Publishing Android Applications**  Theory Duration (06 HR):  Practical Duration (12 HR): | * LO1: bundle application for release on app store * LO2: publishing procedure/processes. * LO3: store licensing policies * LO4: options for monetization strategies |  |
| **6** | **IOS Development** | * LO1: General Overview and Environment Setup * LO2: understand Objective C basics. * LO3: understand Actions and Outlets, UI Elements * LO4: SQLite Database * L05:Application Debugging and deployment |  |
|  | Theory Duration (06 HR):  Practical Duration (12 HR): |

**Module/Unit wise Syllabus Details**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Key Learning Outcomes** | **(L+T+P+S)** |
| **1** | **Understanding the Android Application Development Framework** | Mobile technology : Overview of Android - An Open Platform for Mobile Development, Open Handset Alliance  ,Use Android for mobile app development Android Marketplaces, Android Development Environment setup, Android development Framework - Android-SDK, Eclipse Emulators  /Android AVD ,Creating & setting up custom Android Emulator ,Android  Project Framework and its applications | 15 hours  NOS:-TEL/N2300 |
|  | Practical Duration (hh.mm): 15.00 |  |
| **2** | **Creating Android Projects**  Practical Duration (hh.mm): 15.00 | Android application components Intent, Activity, Activity Lifecycle, Broadcast receivers, Services and Manifest ,Create Application and new Activities, Expressions and Flow control, Android Manifest ,Simple UI -Layouts and Layout properties ,XML Introduction to GUI objects viz. | 15 hours  NOS:- TEL/N2301 |

|  |  |  |  |
| --- | --- | --- | --- |
| **3** | **Data Handling , Messaging and Networking**  Practical Duration (hh.mm): 15.00 | SQLite: Open Helper and create database, Open and close a database, Bundling Database with Application , using Content Providers and resolve to provide an interface to the app’s data | 15 hours  NOS:-TEL/N2301 |
| **4** | **Location Based Services**  **Application Testing & debbuging**  Practical Duration (hh.mm): 15.00 | Android and Creating a MAP Project  ,Obtaining the Maps API Keys, Displaying the Map ,Controlling the Zoom abd changing the Views  ,Navigating to specific locations  Adding Markers ,Getting a locations that was touched ,Geo coding and reverse  Geocoding Monitoring Locations | 15 hours  NOS:-TEL/N2302 |
| **5** | **Publishing Android Applications**  Practical Duration (hh.mm): 15.00 | Bundle application for release on app store, Google licensing, Using Ad mob SDK for ad, Backward compatibility strategies | 15 hours  NOS:-TEL/N2302 |
| **6** | **IOS Development**  Practical Duration (hh.mm): 15.00 | How iOS is tailored to a mobile platform  ,iOS main components and services  ,Custom Views, Controllers, collections, enumeration  Memory Management, Basics, Protocols, VIEWS , UIIma Textual, UIText Viewge View ,SQLite ,Uploading to the app  store | 15 hours  NOS:-TEL/N2313 |

**Text Books/Reference Books**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No** | **Title of the Book** | **Author** | **Edition / volume** | **Text (T)**  **Reference (R)** |
| **1.** | Professional Android 2 Application Development | Reto Meier |  | **R1** |
| **2** | Android Application Development Cookbook- | Rick Boyer and Kyle Mew | Second Edition | **R1** |
| **3** | Android Programming in a Day: The Power Guide for Beginners in Android App Programming | Sam Key |  | **T2** |
| **4** | iOS 9 Application Development in 24 Hours | John Ray | Seventh Edition | **T3** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Other (Pl explain)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Prototype making** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Role Play** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Group Discussions** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Case Study analysis** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Research** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Presentation** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Seminar** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Project** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Tutorial** | ✓ | ✓ | ✓ |  |  |  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |  | ✓ |  |  |  | ✓ |  |  | ✓ |  |  |  |
| **Lab Experiment** | ✓ |  | ✓ |  |  | ✓ |  | ✓ |  | ✓ | ✓ |  |  | ✓ | ✓ | ✓ | ✓ |  |  |  | ✓ | ✓ |  | ✓ | ✓ |  | ✓ |
| **Practical** | ✓ |  | ✓ | ✓ | ✓ | ✓ |  | ✓ |  | ✓ | ✓ |  |  | ✓ |  |  | ✓ | ✓ | ✓ | ✓ |  |  | ✓ |  |  | ✓ |  |
| **Written Test** | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Learning Outcome** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Learning Outcome ID** | LO1 | LO2 | LO3 | L04 | L05 | L06 | LO1 | LO2 | LO3 | LO4 | LO1 | LO2 | LO3 | LO1 | LO2 | LO3 | LO4 | LO1 | LO2 | LO3 | L04 | LO1 | LO2 | L03 | L04 | L05 | L06 |
| **Module/Unit** | **Understanding the Android Application Development** | | | | | | **Creating Android Projects** | | | | **Data Handling, Messaging and Networking** | | | **Location Based Services Application Testing &** | | | | **Publishing Android Applications** | | | | **IOS**  **Development** | | | | | |
| **Sr. No** | 1 | | | | | | 2 | | | | 3 | | | 4 | | | | 5 | | | | 6 | | | | | |

**Assessment Matrix**

**Framework**

**debug**

**Evaluation System**

|  |  |
| --- | --- |
| **Description** | **Allotted marks** |
| Internal Theory | 50 |
| Internal Practical | 40 |
| Term end Theory | 50 |
| Term end Practical | 40 |
| Skill Assessment | 20 |
| TOTAL | 200 |

Internal Theory Assessment –

* Unit Tests – 15 Marks each, 3 number, Best 2
* Assignments – 10 Marks each, 2 number Internal Practical Assessment –
  + Journal Completion – 10 Marks
  + Completion of Experiment / Activities – 10 Marks each, 5 number, Best three Term end Practical –
* Viva Voce on internal practical submission – 10 Marks
* Performance in practical experiment / Activity – 20 Marks
* Presentation in viva/experiment – 10 Marks Skill Assessment –
* Completion of Skill Journal – 5 Marks
* Completion of Activities / Projects during Skill Sessions – 10 Marks
* Viva-voce – 5 Marks

## Weightage of Units for Examination

|  |  |
| --- | --- |
| **Unit** | **% weightage** |
| **Understanding the Android**  **Application Development Framework** | **16.66** |
| **Creating Android Projects** | **16.66** |
| **Data Handling,**  **Messaging and Networking** | **16.66** |
| **Location Based Services**  **Application Testing & Debug** | **16.66** |
| **Publishing Android** | **16.66** |
| **Applications**  **IOS Development** | **16.66** |

# Course Curriculum Pack

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Program Name** | **B-Tech / BBA / BSC / B-Arch** | | | | | | | | | | |
| **Course Name** | Interdisciplinary Course – IV | | | | **Course Code** | | | | | BTCS04GE46 | |
| **Version No** | **3.0** | | | | **Version Update date** | | | | | **7th July 2018** | |
| **Pre- requisite** | * **Basic knowledge of English Language and personality Development** * **LSRW Skills** | | | | | | | | | | |
| **Course Outcome** | Know their goals, SWOT, and personality type. Build the right attitude for themselves.  Know the hierarchy of motivating factors and identify their own level.  Know the importance of values and ethics in professional life and be able to analyse the repercussions of not adhering to the same.  Start a conversation with any stranger in the right manner. Network with people in a professional way. | | | | | | | | | | |
| **Total Credits / L:T:P:S** | 0:0:0:3 | | | | | | | | | | |
| **Teaching & Examination Scheme** | **Teaching Scheme** | | | | | **Examination Scheme** | | | | | |
|  | L 0 | P 0 | T 0 | S 45 | | CAT 0 | Internal 0 | TEE 0 | External 0 | | Skill Assessment 20 |

**The Course Encompasses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Key Learning Outcomes** | **Instructional Activities** |
| **1.** | **Building the right Attitude: Behavior & responsibility** | The **Students** should be able to:   * Understand their own attitude & behavior. * Know of ways to look at things differently. * Know the process involved in mending their own attitude. * Evaluate and monitor the changes in their own attitude.    | The students should be introduced to the impacts that change in attitude can bring in a person through case studies and simple stories. The psychology behind building the right attitude. |
| **2.** | **Goal Setting and SWOT Analysis.** | The **Students** should be able to:   * Set goals for themselves – both long term and short term. * Should be able to analyze their own Strength, Weakness, Opportunities and Threats in respect to their set goals. * Should be able to devise and explain with clarity their own SWOT Strategies. | Individual long term goal setting exercises and techniques should be demonstrated in the class along with parallel short term goals designed in order to achieve the former. Professional strategies adopted for defining personal SWOT should be taught. Strategies for same can be devised using  brainstorming techniques etc. |
| **3.** | **Self Esteem/ Self- Confidence:** | The **Students** should be able to:   * Understand the concepts of self-esteem and Self- confidence. * Recognize healthy and unhealthy levels of self- confidence in youth. | Students will self-evaluate their confidence and learn strategies to protect, raise, and reinforce their self- esteem. |
| **4.** | **Power of positive thoughts & optimism** | The **Students** should be able to:   * Understanding the power of positive thinking for self-development. * Self-rate themselves and know their potential. * Self-regulate their academic learning and identify the distinctive features   of knowledge and skill. | Inputs on Good and Bad Surrounding, Experiences of life . Students will learn about self-Potential. Small workshop |
| **5.** | **Self- integrity/ productivity:** | The **Students** should be able to:   * Build Personal Brand’ for themselves * Develop winning attitude * Identify productive and unproductive performances of self | Workshop will be conducted on topic mentioned. Brainstorm, case base, discussion. |
| **6.** | **Values and Ethics** | The **Students** should be able to:   * Demonstrate appropriate values and ethical behavior in institutions, families and society. | Students will sense the relationship ethics and workplace values for long lasting associations with organizations. |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | * Understand and recognize the   importance of ethical behaviour in both personal and professional life. |  |
| **7.** | **Study skills and Networking** | The **Students** should be able to:   * Study the pattern of study * Peers learning * Utilization of learning resources * Network with different people * Network through social platforms like for example – via LinkedIn profile. * Start and take forward a conversation with almost anyone. | Brainstorming in small group about the studies Counselling  Academic performance analysis  Group counselling Performance based counselling sessions with counselor. |
| **8.** | **Professional Skills as per sector specific need (NSQF)** | The Students should be able to:   * Learn and develop Industry specific traits * Adaptation of proper food habits & hygiene * Imbibe industry habits | Selecting minimum two skill enhancement proposed by NSQF.  Preparing students to develop requires trades as per specific need of skills. |

**Syllabus**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module/Units** | **Detailed Topic wise Syllabus (In bullet points)** | **Total Hours (L**  **+T+P+ S)** |
| **1.** | **Building the right Attitude: Behavior & responsibility** | Attitude – the definition and perception attached to it. Learning about the positive attitude and what defines it. Training the thought process. Grabbing the opportunity in difficulty vs. seeing the difficulty in opportunity. How to think the right way.  The power of visualization. | 4 |
| **2.** | **Goal Setting and SWOT Analysis.** | * SWOT Analysis – As a Tool for Planning * How to interact with our environment. * Where to direct our mental energy. * How to take decisions and cope with emotions * Our approach to work, planning and decision- making | 6 |
| **3.** | **Self Esteem/ Self- Confidence:** | **Types of Personalities** –   * Activists. Theorist, Pragmatists, Reflectors Creators, Fact Finders, Fault Finders, Analysts, Judges etc. * Personality Test of an individual - Learn to understand Self, Others, Building meaningful Relationships.   Individual Personality Test – A Roadmap for Success | 5 |
| **4.** | **Power of positive thoughts & optimism** | **Self Esteem** – Introduction and Importance   * Know your Self-worth, Self-rating, * Self-contemplations and Idiosyncrasies * Loving yourself and uplifting your self esteem * Case Study on Self Esteem   **Self Confidence** – Introduction and importance   * Ways to boost your confidence at work place * Ways to push yourself out of your comfort zone. * Be the change you wish to see. | 6 |
| **5.** | **Self- integrity/**  **productivity:** | **Self-integrity** – Truth to self. | 6 |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | * Self-Monitoring the behavioral approach in Education, Profession and Society.   **Self-Discipline for productivity** - The Science of Self- Discipline.   * The ability to do things that need to be done. * The ability to train and control one’s conduct, feelings and desires. |  |
| **6.** | **Values and Ethics** | * Demonstrate appropriate values and ethical behavior in institutions, families and society. * Understand and recognize the importance of   ethical behaviour in both personal and professional life. | 6 |
| **7.** | **Study skills and Networking** | * Study the pattern of study * Peers learning * Utilization of learning resourses * Network with different people * Network through social platforms like for example – via LinkedIn profile. * Start and take forward a conversation with almost anyone | 6 |
| **8.** | **Professional Skills as per sector specific need (NSQF)** | * How to kick-start a conversation. * What to say after the first greeting. * How to enter the closed group. * How to influence and win people. * Some more tips and techniques. | 6 |

**Learning Resources**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No** | **Module / Unit** | **Text Books** | **Reference Book / Paper / Article / Online Resource (link) / Other** |
| **1.** | **Building the right Attitude:** | *The Power of Positive Thinking* by Norman Vincent Peale.  *The Secret*  by Rhonda Byrne |  |
| **2.** | **Goal Setting and SWOT Analysis.** | “Developing Soft Skills” By  Robert M Sherfield, Montgomery and Moody Chapter 2 |  |
| **3.** | **Personality Tests:** | Developing Soft Skills” By  Robert M Sherfield, Montgomery and Moody Chapter 6 |  |
| **4.** | **Self Esteem/ Self- Confidence:** | Developing Soft Skills” By  Robert M Sherfield, Montgomery and Moody Chapter 2 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **5.** | **Self- Monitoring/ Self- Discipline:** | The Power of Habit by [Charles Duhigg](http://charlesduhigg.com/the-power-of-habit/) |  |
| **6.** | **Self- Motivation**: | Organizational Behaviour by Stephen P. Robbins, Timothy A. Judge Unit 2 |  |
| **7.** | **Values and Ethics** | On the Professional Code of Ethics and Business Conduct in the Workplace: Professional Ethics: 100 Tips to Improve Your Professional Life (Business Professional Series) by [Richard](https://www.amazon.in/s/ref%3Ddp_byline_sr_ebooks_1?ie=UTF8&amp;text=Richard%2BLowe%2BJr&amp;search-alias=digital-text&amp;field-author=Richard%2BLowe%2BJr&amp;sort=relevancerank)  [Lowe Jr.](https://www.amazon.in/s/ref%3Ddp_byline_sr_ebooks_1?ie=UTF8&amp;text=Richard%2BLowe%2BJr&amp;search-alias=digital-text&amp;field-author=Richard%2BLowe%2BJr&amp;sort=relevancerank) |  |
| **8.** | **Networking** | How to Talk to Anyone: 92 Little Tricks for Big Success in Relationships by Leil Lowndes.  How to Win Friends and Influence People by Dale Carnegie |  |

**Assessment Matrix (Assignments / Activities)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sr. No** | **Module/Unit** | **Learning Outcome** | **Written Test** | **Practical Experiment** | **Lab Experiment** | **Tutorial** | **Project** | **Seminar** | **Presentation** | **Research assignments** | **Case Study analysis** | **Group Discussions** | **Role Play** | **Prototype making** | **Other (Pl explain)** |
| **1.** | **Building the** | The **Students** |  |  |  | √ |  |  |  |  |  |  | √ |  |  |
|  | **right** | should be able |  |  |
|  | **Attitude:** | to: |  |  |
|  | **Behavior &** | Know and |  |  |
|  | **responsibility** | build the right |  |  |
|  |  | attitude |  |  |
| **2.** | **Goal Setting** | The **Students** |  |  |  |  |  |  | √ |  |  |  |  |  | √ |
|  | **and SWOT** | should be able |  | Psychometric |
|  | **Analysis.** | to: |  | tests |
|  |  | Set long and |  |  |
|  |  | short terms |  |  |
|  |  | goals and |  |  |
|  |  | analyze his |  |  |
|  |  | SWOT and |  |  |
|  |  | devise |  |  |
|  |  | strategies to |  |  |
|  |  | achieve his |  |  |
|  |  | goal. |  |  |
| **3.** | **Self Esteem/** | The **Students** |  |  |  | √ |  |  |  |  |  |  |  |  | √ |
|  | **Self-** | should be able |  | questionnaires, |
|  | **Confidence:** | to: |  | brainstorming |
|  |  | Identify his |  |  |
|  |  | own |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | personality type and understand defining traits  of personality in others. |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **4.** | **Power of positive thoughts & optimism** | The **Students** should be able to:  Self-monitor the habits and control behavior |  |  |  |  |  |  |  |  |  | √ |  |  |  |
| **5.** | **Self-** | The **Students** |  |  |  |  |  |  |  |  | √ |  |  |  |  |
|  | **integrity/** | should be able |  |
|  | **productivity:** | to: |  |
|  |  | Inculcate self - |  |
|  |  | discipline and |  |
|  |  | understand the |  |
|  |  | rewards of |  |
|  |  | doing so, or |  |
|  |  | repurcussions |  |
|  |  | of not adhering |  |
|  |  | to it. |  |
| **6.** | **Values and** | The **Students** |  |  |  |  |  |  |  |  | √ | √ | √ |  |  |
|  | **Ethics** | should be able |  |  |  |
|  |  | to: |  |  |  |
|  |  | Identify |  |  |  |
|  |  | different levels |  |  |  |
|  |  | of motivation |  |  |  |
|  |  | and |  |  |  |
|  |  | psychology |  |  |  |
|  |  | associated |  |  |  |
|  |  | with it. |  |  |  |
| **7.** | **Study skills** | The **Students** |  |  |  |  |  |  |  |  | √ | √ |  |  | √ Debates |
|  | **and** | should be able |  |  |  |
|  | **Networking** | to: Know and |  |  |  |
|  |  | understand |  |  |  |
|  |  | importance of |  |  |  |
|  |  | values and |  |  |  |
|  |  | ethics in |  |  |  |
|  |  | professional |  |  |  |
|  |  | life. |  |  |  |
| **8.** | **Professional** | The **Students** |  |  |  |  |  |  |  |  | √ | √ | √ |  | √ Extempore |
|  | **Skills as per** | should be able |  |  |  | and JAM |
|  | **sector** | to: |  |  |  |  |
|  | **specific need** | Initiate and |  |  |  |  |
|  | **(NSQF)** | sustain |  |  |  |  |
|  |  | conversation |  |  |  |  |
|  |  | with almost |  |  |  |  |
|  |  | anyone. |  |  |  |  |

**Evaluation System**

|  |  |
| --- | --- |
| **Description** | **Allotted marks** |
| Internal Theory | 0 |
| Internal Practical | 0 |
| Term end Theory | 0 |
| Term end Practical | 0 |
| Skill Assessment | 20 |
| **TOTAL** | **20** |

Skill Assessment –

* Completion of Skill Journal – 5 Marks
* Completion of Activities / Projects during Skill Sessions – 10 Marks
* Viva voce – 5 Marks

**Weightage of Units for Examination**

|  |  |
| --- | --- |
| **Unit** | **% weightage** |
| **Building the right Attitude:** | **10** |
| **Goal Setting and SWOT Analysis.** | **15** |
| **Personality Tests:** | **10** |
| **Self Esteem/ Self-Confidence:** | **10** |
| **Self- Monitoring/ Self-Discipline:** | **10** |
| **Self-Motivation**: | **15** |
| **Values and Ethics** | **15** |
| **Networking** | **15** |

**Skill Plan- 2 hrs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sessio n**  **Numbe r** | **Module**  **/Unit** | **Description of Activity** | **Equipment /Tools** | **Week Number** |
| 1 | I | Workshop |  | 1 |
| 2 | I | Workshop |  | 2 |
| 3 | II | Workshop |  | 3 |
| 4 | II | Workshop |  | 4 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 5 | III | Workshop |  | 5 |
| 6 | III | Workshop |  | 6 |
| 7 | IV | Workshop |  | 7 |
| 8 | IV | Workshop |  | 8 |
| 9 | V | Presentations |  | 9 |
| 10 | V | Presentations |  | 10 |
| 11 | VI | Presentations |  | 11 |
| 12 | VI | Presentations |  | 12 |
| 13 | VII | Presentations |  | 13 |
| 14 | VIII | Group Discussion |  | 14 |
| 15 | VIII | Group Discussion |  | 15 |

**Skill Plan- 1 hr.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sessio n Numbe**  **r** | **Module**  **/Unit** | **Description of Activity** | **Equipment /Tools** | **Week Number** |
| 1 | I | Workshop |  | 1 |
| 2 | I | Workshop |  | 2 |
| 3 | II | Workshop |  | 3 |
| 4 | III | Workshop |  | 4 |
| 5 | III | Presentations |  | 5 |
| 6 | IV | Presentations |  | 6 |
| 7 | IV | Presentations |  | 7 |
| 8 | V | Presentations |  | 8 |
| 9 | V | Presentations |  | 9 |
| 10 | VI | Workshop |  | 10 |
| 11 | VI | Presentations |  | 11 |
| 12 | VII | Presentations |  | 12 |
| 13 | VII | Workshop |  | 13 |
| 14 | VIII | Presentations |  | 14 |
| 15 | VIII | Workshop |  | 15 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **BFSI** | **Retail** | **Technology** |
| Domain Foundation-II | Business Processes and MIS in Banking, Financial Services & Insurance | Business Processes and MIS in Retail Management | Parallel & Distributed Computing |