**Kurukshetra University, Kurukshetra**

**(Established by the State Legislature Act XII of 1956)**

**(‘A+’ Grade, NAAC Accredited)**

|| योगस्थ: कुरु कर्माणि ||

समबुद्धि व योगयुक्त होकर कर्म करो

(Perform Actions while Stead fasting in the State of Yoga)



Scheme of Examination and Syllabus for Undergraduate Programme
Course: Computer Science (Under Multiple Entry-Exit, Internship and
CBCS-LOCF in accordance to NEP-2020) w.e.f 2022-23 in Phased Manner

**DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS**

NEP CURRICULUM (2022-23)

Undergraduate Programme in Subject: Computer Science (**Multiple Entry- Exit, Internship and CBCS-LOCF) in accordance to NEP-2020**)

(For the Batches Admitted From 2022-2023)

**Kurukshetra University, Kurukshetra**

Scheme of Examination and Syllabus for Undergraduate Programme Course: Computer Science
(Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020)

w.e.f 2022-23 in Phased Manner

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| **Semester** | **Course Opted** | **Course Code** | **Course Name**  | **Credits** | **Work load/ hours/week** | **Exam Time (Hrs.)** | **External Marks** | **Internal Marks** | **Total Marks** |
| **Max** | **Max** | **Max** | **Pass** |
| **1** | CORE COURSE(CC-3A) | B-CSE- N-101 | WEB TECHNOLOGIES | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE- N-102 | S/W LAB BASED ON B-CSE-N-101 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| **2** | CORE COURSE(CC-3B) | B-CSE-N-201 | DATABASE MANAGEMENT SYSTEM | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE-N-202 | S/W LAB BASED ON B-CSE-N-201 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| **3** | CORE COURSE(CC-3C) | B-CSE-N-301 | OBJECT ORIENTED PROGRAMMING USING C++  | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE-N-302 | S/W LAB BASED ON B-CSE-N-301 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| **4** | CORE COURSE(CC-3D) | B-CSE-N-401 | DATA STRUCTURES  | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE-N-402 | S/W LAB BASED ON B-CSE-N-401 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| **5** | CORE COURSE HONORS(CC-3H1) | B-CSE-N-501 | ARTIFICIAL INTELLIGENCE | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE-N-502 | S/W LAB BASED ON B-CSE-N-501 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| SKILL ENHANCEMENT COURSE(SEC-5) | B-CSE-N-503 | ELECTIVE-I | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE-N-504 | S/W LAB BASED ON B-CSE-N-503 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| DISCIPLINE SPECIFIC ELECTIVE(DSE-1) | B-CSE-N-505 | ELECTIVE-II | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE-N-506 | S/W LAB BASED ON B-CSE-N-505 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| **ELECTIVE-I**1. OPERATING SYSTEM & SHELL PROGRAMMING
2. COMPUTER NETWORKS AND INTERNET
 | **ELECTIVE-II**1. PROGRAMMING IN JAVA
2. PROGRAMMING IN R
3. MOOC
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| **6** | CORE COURSE HONORS(CC-3H2) | B-CSE-N-601 | COMPUTER GRAPHICS | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE- N-602 | S/W LAB BASED ON B-CSE- N-601 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| SKILL ENHANCEMENT COURSE(SEC-6) | B-CSE- N-603 | ELECTIVE-IV | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE- N-604 | S/W LAB BASED ON B-CSE- N-603 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| DISCIPLINE SPECIFIC ELECTIVE(DSE-2) | B-CSE- N-605 | ELECTIVE-III | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| B-CSE- N-606 | S/W LAB BASED ON B-CSE- N-605 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| **ELECTIVE-III**1. SOFTWARE ENGINEERING
2. DTP PACKAGES
 | **ELECTIVE-IV**1. PROGRAMMING USING PYTHON
2. CYBER SECURITY
3. MOOC
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| **B-CSE-N-101:WEB TECHNOLOGIES** |
| Type: Core Course (CC-3A)Course Credits: 04Contact Hours: 04 hours/week.Examination Duration: 3 HoursMode: LectureExternal Maximum Marks: 50Internal Maximum Marks: 50Total Max. Marks: 100Total Pass Marks: 40 (i.e. 40%) | **Instructions to paper setter for End semester examination:** Examiner will be required to set NINE questions in all. Question No.1 will consist of objective type / short-answer type questions covering the entire syllabus. In addition to Question no. 1, the examiner is required to set EIGHT more questions selecting TWO from each UNIT. Student will be required to attempt FIVE questions in all. Question No.1 will be compulsory. In addition to compulsory question, student will have to attempt FOUR more questions selecting ONE question from each UNIT. All questions will carry equal marks. |
| **Course Objectives:** The aim of the course is to provide knowledge of web as a tool in presenting information. Each and every product in e-world now needs a website, this course will make student knowing about the concept of web design in general |
| **Course Outcomes:**At the end of this course, the student will be able to: **B-CSE– N-101.1:** understand the basic terminology of hardware and software components of a computer system and web.**B-CSE-N-101.2:** learn the skills that will enable him/her to design simple web pages.**B-CSE-N-101.3:** learn CSS to specify style to web pages.**B-CSE-N-101.4:** understandclient side programming.

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| **CO-PO Mapping Matrix for Course Code: B-CSE-N-101** |
| **COs** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** |
| **B-CSE– N-101.1** | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 |
| **B-CSE– N-101.2** | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| **B-CSE– N-101.3** | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 |
| **B-CSE– N-101.4** | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| **Average** | 3 | 2.5 | 2.5 | 3 | 3 | 2 | 2 | 2 | 2 | 2.5 | 2 |

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| **CO-PSO Mapping Matrix for Course Code: B-CSE-N-101** |
| **COs** | **PSO1** | **PSO2** | **PSO3** |
| **B-CSE– N-101.1** | 3 | 3 | 2 |
| **B-CSE– N-101.2** | 2 | 3 | 3 |
| **B-CSE– N-101.3** | 3 | 3 | 2 |
| **B-CSE– N-101.4** | 2 | 3 | 3 |
| **Average** | 2.5 | 3 | 2.5 |

**UNIT – I** Computer Fundamentals: Evolution of Computers through generations, Functional Components of a Computer System, Software, Hardware components of a computer system.Introduction to Internet and World Wide Web (WWW), Web Browsers and its functions, Web Servers,; HTTP, FTP, URLs, Search Engines, Web Pages: Static web page and dynamic web page, Web Publishing. |
| **UNIT – II** Web Development: HTML Document Features, HTML Document Structure, Creating Links; Headings; Text styles; Text Structuring; Text colour and Background; Formatting text; Page layouts, Images; Ordered and Unordered lists; Table, Frame, Working with Forms, Radio Buttons; Check Boxes; |
| **UNIT – III**Introduction to CSS (Cascading Style Sheets): Features, basic syntax and structure, Types of CSS, CSS box model, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS.The<span> and <div> tags  |
| **UNIT – IV** JavaScript: Introduction, Features, Data types, Operators, Statements, Functions, Event Handling, Use of Predefined Object and Methods, Frames, Windows, Tables, Images, Links, VBScript: Introduction, Features, Variables, Data Types, Numeric and Literal Constants, Arrays, Operators, Subroutine Procedures, Function Procedures, Control Statements, Strings, Message and Input Boxes, Date and Time, Event Handlers. Active Script Pages: Introduction, Features, Client-Server Model, Data Types, Decision Making Statements, Control statements, Use of Various Objects of ASP |
| **Text Books:** * + - 1. Sinha, P.K. &Sinha, Priti, Computer Fundamentals, BPB.
			2. Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.
 |
| **Reference Books:** 1. Thomas A. Powell, Web Design: The Complete Reference, Tata McGraw-Hill
2. Wendy Willard, HTML Beginners Guide, Tata McGraw-Hill.
3. Deitel and Goldberg, Internet and World Wide Web, How to Program, PHI.
4. Kogent Learning, Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML, AJAX – Black Book, Wiley India Pvt. Ltd.
5. Kogent Learning, Asp.Net – Black Book, Wiley India Pvt. Ltd.
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| **B-CSE-N-201: DATABASE MANAGEMENT SYSTEM** |
| Type: Core Course (CC-3A)Course Credits: 04Contact Hours: 04 hours/week.Examination Duration: 3 HoursMode: LectureExternal Maximum Marks: 50Internal Maximum Marks: 50Total Max. Marks: 100Total Pass Marks: 40 (i.e. 40%) | **Instructions To Paper Setter For End Semester Exam:** Examiner will be required to set NINE questions in all. Question No.1 will consist of objective type / short-answer type questions covering the entire syllabus. In addition to Question no. 1, the examiner is required to set EIGHT more questions selecting TWO from each UNIT. Student will be required to attempt FIVE questions in all. Question No.1 will be compulsory. In addition to compulsory question, student will have to attempt FOUR more questions selecting ONE question from each UNIT. All questions will carry equal marks. |
| **Course Objectives:** Today almost all real life problems include data**.** The objective of this paper to get student aware about the basic concept of Data. In this paper student will learn database management and its implementation. |
| **Course Outcomes:**At the end of this course, the student will be able to: **B-CSE-N-201.1:** learn basic concepts of database along with its functions and components.**B-CSE-N-201.2:** understand Relational data models.**B-CSE-N-201.3:**understand functional dependency and normalization.**B-CSE-N-201.4:** understand SQL as query language and server side PHP Programming.

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| **CO-PO matrix for the Course Code: B-CSE-N-201** |
| **COs** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** |
| **B-CSE-N-201.1** | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 |
| **B-CSE-N-201.2** | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 2 | 2 |
| **B-CSE-N-201.3** | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 |
| **B-CSE-N-201.4** | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 2 |
| **Average** | 2.75 | 2.75 | 2.5 | 2.75 | 2.75 | 2 | 2 | 2.25 | 2.25 | 2 | 2 |

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| **CO-PSO Mapping Matrix for Course Code: B-CSE-N-201** |
| **COs** | **PSO1** | **PSO2** | **PSO3** |
| **B-CSE-N-201.1** | 3 | 3 | 2 |
| **B-CSE-N-201.2** | 2 | 3 | 3 |
| **B-CSE-N-201.3** | 1 | 3 | 3 |
| **B-CSE-N-201.4** | 1 | 3 | 3 |
| **Average** | 1.75 | 3 | 2.75 |

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| **UNIT – I** Basic Concepts: File Systems vs. DBMS, Characteristics of Database Approach, Abstraction and Data Integration, Database users, Advantages and Disadvantages of DBMS, Database Systems Architecture: Data Models, Schema and Instances, Data Independence, DBMS functions. |
| **UNIT – II** Entity Relationship Model: Entity Types, Entity Sets, Attributes & keys, Relationships Types & instances, Roles and Structural Constraints, E-R Diagrams, Making ER Diagrams for Inventory, Book Store, Library and Flight Management System etcCodd’s Rule for Relational Model ; Relational Data Model: Basic Concepts, Integrity Constraints over Relations, Hierarchical Model, Network Model.  |
| **Unit – III** Functional Dependencies, Decomposition, Types of Functional Dependency, Normalization: Benefits and Need of Normalization, Normal Forms Based on Primary Keys- (1NF, 2NF, 3NF, BCNF), Multi-valued Dependencies, 4 NF, Join dependencies, 5 NF, Domain Key Normal Form. Transactions: Acid Properties, Operations on Transactions, Concurrency: Problems, Concurrency Control Techniques, Locking Schemes, Deadlock: Methods for Handling Deadlock, Database Backup and Recovery: Recovery Techniques, Shadow Paging, Database Security. |
| **UNIT – IV**SQL: Meaning, Purpose and Need of SQL, Data Types, SQL Components: DDL, DML, DCL and DQL, Basic Queries, Join Operations and Sub-queries, Views, Specifying Indexes. Constraints and its Implementation in SQL. Relational Algebra: Basic Operations: Select, Project, Join, Union, Intersection, Difference, and Cartesian Product etc.PHP: Installing and Configuring MySQL and PHP, Basic Security Guidelines, Variables, Data Types, Operators and Expressions, Constants, Flow Control Functions; Switching Flow, Loops, Code Blocks and Browser Output, Objects, Strings Processing |
| **Text Books:**1. Elmasri&Navathe: Fundamentals of Database systems, Pearson Education.
2. Thomas Connolly Carolyn Begg: Database Systems, Pearson Education.
 |
| **Reference Books:**1. Korth&Silberschatz: Database System Concept,McGraw Hill International Edition.
2. Raghu Ramakrishnan& Johannes Gehrke: Database Management Systems, Mcgraw Hill.
3. Ivan Bayross: SQL, PL/SQL- The Program Language of ORACLE,BPB Publication.
4. Kogent Learning, Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML, AJAX – Black Book, Wiley India Pvt. Ltd.
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