# Kurukshetra University, Kurukshetra

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

**('A+' Grade, NAAC Accredited)**

|| योगस्थ: कुरु कर्माणि ||

समबुद्धि व योग युक्त होकर कर्म करो

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

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

# Kurukshetra University, Kurukshetra

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

## 1. Programme Structure

**Course Structure under Learning Outcome Based Curriculum Framework (LOCF-CBCS) and Multiple Entry Exit**

| Semester | Core Course(CC) @6credits Subject-1 | Core Course (CC)@6credits Subject-2 | Core Course @6credits Subject-3 | Ability Enhancement Compulsory Course (AECC) @2credits | Skill Enhancement Course (SEC) @2-6credits | Discipline Specific Course (DSE)**@6credits | Activity/Hobby/ Clubs @2 credits (Audit courses) | Total Credits | Exit Option |
|---|---|---|---|---|---|---|---|---|---|
| | Software Development | Data Science and Machine Learning | Full Stack Development | | | | | | |
| I Level 5 | CC-1A | CC-2A | CC-3A | Common with other UG Programme | Common with other UG Programme | | Common with other UG Programme | 24 | Certificate in Computer Applications @ 58 credits |
| II Level 5 | CC-1B | CC-2B | CC-3B | Common with other UG Programme | Common with other UG Programme | | Common with other UG Programme | 24 | |

**Internship 10 Credits (only for Exit option)**

| Semester | Core Course (CC) @6credits Subject-1 | Core Course (CC)@6credits Subject-2 | Core Course @6credits Subject-3 | General Elective course @ 6 credits | Skill Enhancement Course (SEC) @2-6credits | Discipline Specific Course (DSE)**@6 credits | Activity/Hobby/ Clubs @2 credits (Audit courses) | Total Credits | Exit Option |
|---|---|---|---|---|---|---|---|---|---|
| | Software Development | Data Science and Machine Learning | Full Stack Development | | | | | | |
| III Level 6 | CC-1C | CC-2C | CC-3C | Common with other UG Programme | Common with other UG Programme | | Common with other UG Programme | 22+ 6* | Diploma in Computer Applications @ 106 Credits |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **IV Level 6** | CC-1D | CC-2D | CC-3C | Common with other UG Programme | Common with other UG Programme | | Common with other UG Programme | 22+6* | |
| **Summer Internship of 10 Credits (Compulsory for all students)** | | | | | | | | | |
| **Semester** | **Core Course (CC) @6credits Subject-1** | **Core Course (CC)@6credits Subject-2** | **Core Course @6credits Subject-3** | **General Elective course @ credits** | **Skill Enhancement Course (SEC) @2-6credits** | **Discipline Specific Course (DSE)**@6 credits** | **Activity/Hobby/ Clubs @2 credits (Audit courses)** | **Total Credits** | **Exit Option** |
| | **Software Development** | **Data Science and Machine Learning** | **Full Stack Development** | | | | | | |
| **V Level 7** | CC- $1H^{H}$ | CC- $1H^{H}$ | CC- $1H^{H}$ | Common with other UG Programme | SEC-5(Major subject) @6credits | DSE-1 (Major subject-1) DSE-2 (Major Subject-2) | 2 | 20 + 10 of Summer Internship +6 $^{H}$+6* | Graduation in Computer Applications @146 Credits and with Honours @ 158 Credits |
| **VI Level 7** | CC- $2H^{H}$ | CC- $1H^{H}$ | CC- $1H^{H}$ | Common with other UG Programme | SEC-5(Major subject) @6credits | DSE-1 (Major subject-1), DSE-2 (Major Subject - 2) | | 20+6 $^{H}$+6* | |
| **Semester** | **Core Courses** | **Research Courses and Thesis** | | | **Research Progression Seminars** | | | **Credits** | **Exit** |
| **VII Level 8** | CC-$1H^{H}$ and CC-$2H^{H}$ of level 7 to be completed by Graduate students without Honours | Research Ethics @4 credits<br>Research Methodology @4 credits | | | Review of literature General Seminar @ 4 Credits<br>Synopsis writing and Seminar @ 4 credits | | | 16 | Graduation in (Tourism and Travel Management) Honours with Research @ 198 Credits |
| **VIII Level 8** | | Dissertation/Thesis Preparation/ Writing @ 20 credits | | | Midterm seminar @ 2 Credits<br>Pre- submission Seminar @ 2 Credits | | | 24 | |

**Notes:**

1. Credits (C), Core Courses (CC); Discipline Specific Elective Courses (DSE); General Elective Courses (GE); Skill Enhancement Courses (SEC), Ability Enhancement Compulsory Courses (AECC).
2. *Students can opt for one course from other programmes as General Elective @ 6 credits in IIIrd, IVth, Vth and VIth semesters subject to the availability of seats and class timings not overlapping.
3. $^{H}$ Honours courses. CC- 1H and CC-2H are Honours courses to be taken if students opt for Honours course in third year and will have to be taken compulsorily by the students opting for 4$^{th}$ year of the programme (Honours and Research) if these courses are not completed earlier at level 7.
4. All the Internship, dissertation/thesis will be effected through guided learning by allotting a teacher as guide to every student. Workload of above shall be computed per student as per Credit hours of above defined in ordinance.
5. Each candidate shall be examined in the courses through a system of Comprehensive Continuous Assessment using a mix of Internal and End term evaluation. The Internal Assessment and End term evaluation for different courses of programme shall carry weightage of 50% each. Internal assessment (50%) shall be based on clearly defined components of class attendance and participation (10%), mid-term exam of 2-hour duration (30%) and assignments-presentations (10%) of the credit and the rest (50 %) through End Term Examination.
6. DSE Selection- Options from following buckets will be offered for Majors at level 7 subject to availability.
7. Honours Selection- Options from following buckets will be offered for Honours at level 7/8 subject to availability.
8. SEC Selection- Options from following buckets will be offered for Majors at level 7 subject to availability.

## STREAM: SOFTWARE DEVELOPMENT (SDE)

| Semester | Core Course | Paper Code | Nomenclature of Paper | Credits | Work load/ hour/ week | Exam Time (Hrs) | Internal Marks | External Marks | Total Marks | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Max | Max | Max | Pass |
| 1 | CC-1A | B-SDE-N-101 | PROBLEM SOLVING USING C | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-SDE- N-102 | S/W LAB – I BASED ON B-SDE- N-101 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 2 | CC-1B | B-SDE- N-201 | DATA STRUCTURES USING C | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-SDE- N-202 | S/W LAB – II BASED ON B-SDE- N-201 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 3 | CC-1C | B-SDE- N-301 | COMPUTER ORGANIZATION | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-SDE- N-302 | S/W LAB – III BASED ON B-SDE- N-301 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 4 | CC-1D | B-SDE- N-401 | OBJECT-ORIENTED PROGAMMING USING C++ | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-SDE- N-402 | S/W LAB – IV BASED ON B-SDE- N-401 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 5 | CC-1H | B-SDE- N-501 | SOFTWARE PROJECT MANAGEMENT | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-SDE- N-502 | S/W LAB – V BASED ON B-SDE- N-501 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | DSE | B-SDE- N-503 | ELECTIVE –I | 4 | 4 | 3 | 50 | 50 | 100 | 40 |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | B-SDE- N-504 | S/W LAB – VI BASED ON B-SDE- N-503 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | SEC-5 | B-SDE- N-505 | ELECTIVE-II | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-SDE- N-506 | S/W LAB – VII BASED ON B-SDE- N-505 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | **ELECTIVE –I** | | | | | | | | | |
| | B-SDE- N-503(i) | | PROGRAMMING WITH JAVA | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-SDE- N-503(ii) | | OPERATING SYSTEMS | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-SDE- N-503(iii) | | MOOC | | | | | | | |
| | **ELECTIVE –II** | | | | | | | | | |
| | B-SDE- N-505 (i) | | DATA ANALYSIS USING SPREADSHEETS | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-SDE- N-505 (ii) | | ARTIFICIAL INTELLIGENCE | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-SDE- N-505(iii) | | MOOC | | | | | | | |
| 6 | CC-2H | B-SDE- N-601 | COMPILER DESIGN | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-SDE- N-602 | S/W LAB – VIII BASED ON B-SDE- N-601 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | DSE | B-SDE- N-603 | ELECTIVE –III | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-SDE- N-604 | S/W LAB – IX BASED ON B-SDE- N-603 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | SEC-6 | B-SDE- N-605 | ELECTIVE-IV | 4 | 4 | 3 | 50 | 50 | 100 | 40 |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | B-SDE- N-606 | S/W LAB – X BASED ON B-SDE- N-605 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | **ELECTIVE –III** | | | | | | | | | |
| | B-SDE- N-603(i) | | ALGORITHMS DESIGN AND IMPLEMENTATION | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-SDE- N-603(ii) | | ADVANCED PROGRAMMING CONCEPTS | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-SDE- N-603(iii) | | MOOC | | | | | | | |
| | **ELECTIVE –IV** | | | | | | | | | |
| | B-SDE- N-605 (i) | | CYBER SECURITY | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-SDE- N-605 (ii) | | DIGITAL MARKETING | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-SDE- N-605(iii) | | MOOC | | | | | | | |
| 7 | RESEARCH COURSES AND THESIS | B-SDE- N-701 | RESEARCH ETHICS | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-SDE- N-702 | RESEARCH METHODOLOGY | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | RESEARCH PROGRESS ION SEMINAR | B-SDE- N-703 | REVIEW OF LITERATURE GENERAL SEMINAR | 4 | 4 | - | - | - | 100 | 40 |
| | | B-SDE- N-704 | SYNOPSIS WRITING AND SEMINAR | 4 | 4 | - | - | - | 100 | 40 |
| 8 | RESEARCH COURSES AND THESIS | B-SDE- N-801 | DISSERTATION/THESIS PREPARATION/ WRITING | 20 | 20 | - | - | - | 500 | 200 |
| | RESEARCH PROGRESS | B-SDE- N-802 | MIDTERM SEMINAR | 2 | 2 | - | - | - | 50 | 20 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ION SEMINAR | B-SDE-N-803 | PRE- SUBMISSION SEMINAR | 2 | 2 | - | - | - | 50 | 20 |

## STREAM: DATA SCIENCE AND MACHINE LEARNING (DSM)

| Semester | Core Course | Paper Code | Nomenclature of Paper | Credits | Work load/ hour/ week | Exam Time (Hrs) | Internal Marks | External Marks | Total Marks | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Max | Max | Max | Pass |
| 1 | CC-2A | B-DSM- N-101 | DATABASE MANAGEMENT SYSTEM | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-DSM- N-102 | S/W LAB – I BASED ON B-DSM- N-101 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 2 | CC-2B | B-DSM- N-201 | ADVANCED WEB TECHNOLOGIES | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-DSM- N-202 | S/W LAB – II BASED ON B-DSM- N-201 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 3 | CC-2C | B-DSM- N-301 | LINUX AND SHELL PROGRAMMING | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-DSM- N-302 | S/W LAB – III BASED ON B-DSM- N-301 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 4 | CC-2D | B-DSM- N-401 | THEORETICAL COMPUTER SCIENCE | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-DSM- N-402 | S/W LAB – IV BASED ON B-DSM- N-401 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 5 | CC-1H | B-DSM- N-501 | DATA MINING & WAREHOUSING | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-DSM- N-502 | S/W LAB – V BASED ON B-DSM- N-501 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | DSE | B-DSM- N-503 | ELECTIVE –I | 4 | 4 | 3 | 50 | 50 | 100 | 40 |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | B-DSM-N-504 | S/W LAB – VI BASED ON B-DSM- N-504 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | SEC-5 | B-DSM-N-505 | ELECTIVE-II | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-DSM-N-506 | S/W LAB – VII BASED ON B-DSM- N-505 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | **ELECTIVE –I** | | | | | | | | | |
| | B-DSM- N-503(i) | | DATA VISUALIZATION USING PYTHON | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-DSM- N-503(ii) | | DATA VISUALIZATION USING R | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-DSM- N-503(iii) | | MOOC | | | | | | | |
| | **ELECTIVE –II** | | | | | | | | | |
| | B-DSM- N-505 (i) | | DATA ANALYSIS USING SPREADSHEETS | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-DSM- N-505 (ii) | | ARTIFICIAL INTELLIGENCE | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-DSM- N-505(iii) | | MOOC | | | | | | | |
| **6** | CC-2H | B-DSM-N-601 | BIGDATA TECHNOLOGY | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-DSM-N-602 | S/W LAB – VIII BASED ON B-DSM- N-601 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | DSE | B-DSM-N-603 | ELECTIVE –III | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-DSM-N-604 | S/W LAB – IX BASED ON B-DSM- N-603 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |

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|---|---|---|---|---|---|---|---|---|---|---|
| | SEC-5 | B-DSM-N-605 | ELECTIVE-IV | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-DSM-N-606 | S/W LAB – X BASED ON B-DSM- N-605 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | **ELECTIVE –III** | | | | | | | | | |
| | B-DSM- N-603 (i) | | MACHINE LEARNING USING PYTHON | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-DSM- N-603 (i) | | MACHINE LEARNING USING R | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-DSM- N-603 (iii) | | MOOC | | | | | | | |
| | **ELECTIVE –VI** | | | | | | | | | |
| | B-DSM- N-605 (i) | | CYBER SECURITY | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-DSM- N-605 (ii) | | DIGITAL MARKETING | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-DSM- N-605(iii) | | MOOC | | | | | | | |
| 7 | RESEARCH PROGRESSION SEMINAR | B-DSM-N-703 | REVIEW OF LITERATURE GENERAL SEMINAR | 4 | 4 | - | - | - | 100 | 40 |
| | | B-DSM-N-704 | SYNOPSIS WRITING AND SEMINAR | 4 | 4 | - | - | - | 100 | 40 |
| | RESEARCH COURSES AND THESIS RESEARCH PROGRESSION SEMINAR | B-DSM-N-801 | DISSERTATION/THESIS PREPARATION/ WRITING | 20 | 20 | - | - | - | 500 | 200 |
| | | B-DSM-N-802 | MIDTERM SEMINAR | 2 | 2 | - | - | - | 50 | 20 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 8 | RESEARCH COURSES AND THESIS | B-DSM-N-801 | DISSERTATION/THESIS PREPARATION/ WRITING | 20 | 20 | - | - | - | 500 | 200 |
| | RESEARCH PROGRESSION SEMINAR | B-DSM-N-802 | MIDTERM SEMINAR | 2 | 2 | - | - | - | 50 | 20 |
| | | B-DSM-N-803 | PRE- SUBMISSION SEMINAR | 2 | 2 | - | - | - | 50 | 20 |

## STREAM: FULL STACK DEVELOPMENT (FSD)

| Semester | Core Course | Paper Code | Nomenclature of Paper | Credits | Work load/ hour/ week | Exam Time (Hrs) | Internal Marks | External Marks | Total Marks | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Max | Max | Max | Pass |
| 1 | CC-3A | B-FSD- N-101 | INTRODUCTION TO WEB TECHNOLOGY | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-FSD- N-102 | S/W LAB – I BASED ON B-FSD- N-101 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 2 | CC-3B | B-FSD- N-201 | PROGRAMMING WITH JAVASCRIPT | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-FSD- N-202 | S/W LAB – II BASED ON B-FSD- N-201 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 3 | CC-3C | B-FSD- N-301 | SOFTWARE ENGINEERING | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-FSD- N-302 | S/W LAB – III BASED ON B-FSD- N-301 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 4 | CC-3D | B-FSD- N-401 | COMPUTER NETWORKS | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-FSD- N-402 | S/W LAB – IV BASED ON B-FSD- N-401 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| 5 | CC-1H | B-FSD- N-501 | NOSQL DATABASES | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-FSD- N-502 | S/W LAB – V BASED ON B-FSD- N-501 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | DSE | B-FSD- N-503 | ELECTIVE –I | 4 | 4 | 3 | 50 | 50 | 100 | 40 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | B-FSD- N-504 | S/W LAB – VI BASED ON B-FSD- N-503 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | SEC-5 | B-FSD- N-505 | ELECTIVE-II | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-FSD- N-506 | S/W LAB –VII BASED ON B-FSD- N-505 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | **ELECTIVE –I** | | | | | | | | | |
| | B-FSD- N-503(i) | | BACK-END DEVELOPMENT | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-FSD- N-503(ii) | | CLOUD COMPUTING | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-FSD- N-503(iii) | | MOOC | | | | | | | |
| | **ELECTIVE –II** | | | | | | | | | |
| | B-FSD- N-505 (i) | | DATA ANALYSIS USING EXCEL | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-FSD- N-505 (ii) | | ARTIFICIAL INTELLIGENCE | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-FSD- N-505(iii) | | MOOC | | | | | | | |
| **6** | CC-2H | B-FSD- N-601 | SOFTWARE PROJECT MANAGEMENT | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-FSD- N-602 | S/W LAB – VIII BASED ON B-FSD- N-601 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | DSE | B-FSD- N-603 | ELECTIVE –III | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-FSD- N-604 | S/W LAB – XIV BASED ON B-FSD- N-603 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | SEC-5 | B-FSD- N-605 | ELECTIVE-IV | 4 | 4 | 3 | 50 | 50 | 100 | 40 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | B-FSD- N-606 | S/W LAB – XVI BASED ON B-FSD- N-605 | 2 | 4 | 3 | 25 | 25 | 50 | 20 |
| | **ELECTIVE –III** | | | | | | | | | |
| | B-FSD- N-603 (i) | | DEVOPS | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-FSD- N-603 (ii) | | SOFTWARE TESTING | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-FSD- N-603 (iii) | | MOOC | | | | | | | |
| | **ELECTIVE –IV** | | | | | | | | | |
| | B-FSD- N-605 (i) | | CYBER SECURITY | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-FSD- N-605 (ii) | | DIGITAL MARKETING | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | B-FSD- N-605(iii) | | MOOC | | | | | | | |
| 7 | RESEARCH COURSES AND THESIS | B-FSD- N-701 | RESEARCH ETHICS | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | | B-FSD- N-702 | RESEARCH METHODOLOGY | 4 | 4 | 3 | 50 | 50 | 100 | 40 |
| | RESEARCH PROGRESS ION SEMINAR | B-FSD- N-703 | REVIEW OF LITERATURE GENERAL SEMINAR | 4 | 4 | - | - | - | 100 | 40 |
| | | B-FSD- N-704 | SYNOPSIS WRITING AND SEMINAR | 4 | 4 | - | - | - | 100 | 40 |
| 8 | RESEARCH COURSES AND THESIS | B-FSD- N-801 | DISSERTATION/THESIS PREPARATION/ WRITING | 20 | 20 | - | - | - | 500 | 200 |
| | RESEARCH PROGRESS ION SEMINAR | B-FSD- N-802 | MIDTERM SEMINAR | 2 | 2 | - | - | - | 50 | 20 |
| | | B-FSD- N-803 | PRE- SUBMISSION SEMINAR | 2 | 2 | - | - | - | 50 | 20 |

**B-SDE-N-101: Problem Solving using C**

Type: Core Course (CC-1A)
Course Credits: 04
Contact Hours: 04 hours/week.
Examination Duration: 3 Hours
Mode: Lecture
External Maximum Marks: 50
Internal Maximum Marks: 50
Total Max. Marks: 100
Total 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:** The aim of the course is to provide basic knowledge of C as a High level language as one of the programming tool and generating logical development skills using programming.

**Course Outcomes:** At the end of this course, the student will be able to:
**B-SDE-N-101**.1 learn the basics of C program, data types and input/output statements.
**B-SDE-N-101**.2 understand different types of operators, their hierarchies and also control statements of C.
**B-SDE-N-101**.3 implement programs using arrays and strings.
**B-SDE-N-101**.4 get familiar with advanced concepts like structures, union etc. in C language.

**CO-PO Mapping Matrix for Course Code: B-SDE-N-101**

| COs# | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B-SDE-N-101.1 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 |
| B-SDE-N-101.2 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| B-SDE-N-101.3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |
| B-SDE-N-101.4 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| Average | 2.75 | 2.5 | 2.5 | 2.75 | 2.75 | 2.25 | 2.25 | 2.25 | 2 | 2 | 1.75 |

**CO-PSO Mapping Matrix for Course Code: B-SDE-N-101**

| COs# | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| B-SDE-N-101.1 | 3 | 3 | 2 | 3 | 3 |
| B-SDE-N-101.2 | 3 | 2 | 3 | 3 | 3 |
| B-SDE-N-101.3 | 2 | 3 | 3 | 3 | 2 |
| B-SDE-N-101.4 | 3 | 2 | 2 | 2 | 3 |
| Average | 2.75 | 2.5 | 2.5 | 2.75 | 2.75 |

**UNIT-I**

Computer Fundamentals: Evolution of Computers through generations, Functional Components of a Computer System, Software, Hardware components of a computer system.
Overview of C: History, Importance, Structure of C Program, Character Set, Constants and Variables, Identifiers and Keywords, Data Types, Assignment Statement, Symbolic Constant.
Input/output: Unformatted & Formatted I/O Function, Input Functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts().

**UNIT-II**

Operators & Expression: Arithmetic, Relational, Logical, Bitwise, Unary, Assignment, Conditional Operators and

Special Operators Operator Hierarchy & Associativity. Arithmetic Expressions, Evaluation of Arithmetic Expression, Type Casting and Conversion. Decision making with if statement, if-else statement, nested if statement, else-if ladder, switch and break statement, goto statement, Looping Statements: for, while, and do-while loop, jumps in loops.

**UNIT-III**

Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation.

Functions: definition, prototype, function call, passing arguments to a function: call by value, call by reference, recursive functions.

Strings: Declaration and Initialization, String I/O, Array of Strings, String Manipulation Functions: String Length, Copy, Compare, Concatenate etc., Search for a Substring.

**Unit – IV**

Storage Classes in C: Auto, Extern, Register and Static and their Scope, Storage & Lifetime.

Pointers in C: Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays.

User defined data types: Structures - Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, Array of Structures; Unions - Union definition; difference between Structure and Union.

**Text Books:**


1. Gottfried, Byron S., Programming with C, Tata McGraw Hill.
2. Balagurusamy, E., Programming in ANSI C, Tata McGraw-Hill.


**Reference Books:**


1. Jeri R. Hanly & Elliot P. Koffman, Problem Solving and Program Design in C, Addison Wesley.
2. Yashwant Kanetker, Let us C, BPB.
3. Rajaraman, V., Computer Programming in C, PHI.
4. Yashwant Kanetker, Working with C, BPB.

| B-SDE-N-102: S/W LAB-I BASED ON B-SDE-N-101 | |
|---|---|
| Type: Core Course (CC-1A)<br>Course Credits: 02<br>Contact Hours: 04 hours/week.<br>Examination Duration: 3 Hours<br>Mode: LAB<br>External Maximum Marks: 25<br>Internal Maximum Marks: 25<br>Total Max. Marks: 50<br>Total Pass Marks: 20 (i.e. 40%) | **Instructions To Examiner For End Semester Exam:** Examiner will be required to check the practical knowledge of the student by providing some assignment related to the course, checking the practical records maintained by the student and conducting a viva-voce. |
| **Course Objectives:** The aim of the course is to provide basic knowledge of C as a High level language as one of the programming tool and generating logical development skills using programming. | |
| **LAB WILL BE BASED ON CURRICULUM OF B-SDE-N-101. STUDENT WILL HAVE TO MAINTAIN THE RECORD OF ALL THE PRACTICALS CONDUCTED IN THE LAB.** | |

**B-DSM-N-101: DATA BASE MANAGEMENT SYSTEM**

Type: Core Course (CC-2A)
Course Credits: 04
Contact Hours: 04 hours/week.
Examination Duration: 3 Hours
Mode: Lecture
External Maximum Marks: 50
Internal Maximum Marks: 50
Total Max. Marks: 100
Total 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 course to make students aware about the basic concept of Data. In this paper, students will learn database management and its implementation.

**Course Outcomes:** At the end of this course, the student will be able to:
B-DSN-N-101.1. learn basic concepts of database along with its functions and components.
B-DSN-N-101.2. understand data base architecture and different data models.
B-DSN-N-101.3. understand functional dependency and normalization.
B-DSN-N-101.4. write SQL statements to retrieve information and learn the concept of relational algebra and calculus.

**CO-PO Mapping Matrix for Course Code: B-DSN-N-101**

| COs# | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B-DSN-N-101.1 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 |
| B-DSN-N-101.2 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 2 | 2 |
| B-DSN-N-101.3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | 1 | 1 | 2 |
| B-DSN-N-101.4 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 |
| Average | 3 | 2.75 | 2.5 | 2.75 | 2.75 | 2 | 1.75 | 2.25 | 2.25 | 2 | 2 |

**CO-PSO Mapping Matrix for Course Code: B-DSN-N-101**

| COs# | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| B-DSN-N-101.1 | 3 | 3 | 2 | 3 | 3 |
| B-DSN-N-101.2 | 3 | 2 | 3 | 3 | 3 |
| B-DSN-N-101.3 | 2 | 3 | 3 | 3 | 2 |
| B-DSN-N-101.4 | 3 | 2 | 2 | 2 | 3 |
| Average | 2.75 | 2.5 | 2.5 | 2.75 | 2.75 |

**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 and other examples.

Codd'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.

Relational Algebra: Basic Operations: Select, Project, Join, Union, Intersection, Difference, and Cartesian Product etc. Relational Calculus: Tuple Relational and Domain Relational Calculus. Relational Algebra Vs. Relational Calculus.

**Text Books:**

1. Elmasri & Navathe, Fundamentals of Database Systems, Pearson Education.
2. A Silberschatz, H Korth, S Sudarshan, Database System and Concepts, McGraw-Hill.

**Reference Books:**

1. Thomas Connolly Carolyn Begg, Database Systems, Pearson Education.
2. C. J. Date, An Introduction to Database Systems, Addison Wesley.

| B-DSM- N-102: S/W LAB-I BASED ON B-DSM- N-101 | |
|---|---|
| Type: Core Course (CC-2A)<br>Course Credits: 02<br>Contact Hours: 04 hours/week.<br>Examination Duration: 3 Hours<br>Mode: LAB<br>External Maximum Marks: 25<br>Internal Maximum Marks: 25<br>Total Max. Marks: 50<br>Total Pass Marks: 20 (i.e. 40%) | **Instructions To Examiner For End Semester Exam:** Examiner will be required to check the practical knowledge of the student by providing some assignment related to the course, checking the practical records maintained by the student and conducting a viva-voce. |
| **Course Objectives:** The aim of the course is to provide basic knowledge of C as a High level language as one of the programming tool and generating logical development skills using programming. | |
| **LAB WILL BE BASED ON CURRICULUM OF B-DSM- N-101. STUDENT WILL HAVE TO MAINTAIN THE RECORD OF ALL THE PRACTICALS CONDUCTED IN THE LAB.** | |

## B-FSD-N-101: INTRODUCTION TO WEB TECHNOLOGY

Type: Core Course (CC-3A)
Course Credits: 04
Contact Hours: 04 hours/week.
Examination Duration: 3 Hours
Mode: Lecture
External Maximum Marks: 50
Internal Maximum Marks: 50
Total Max. Marks: 100
Total 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:** 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-FSD-N-101.1. learn about WWW and search engines.
B-FSD-N-101.2. understand domain and assigning name to them.
B-FSD-N-101.3. understand basic web languages and its components.
B-FSD-N-101.4. perform simple web page designing for practical exposure.

**CO-PO Mapping Matrix for Course Code: B-FSD-N-101**

| COs# | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B-FSD-N-101.1 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 |
| B-FSD-N-101.1 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| B-FSD-N-101.1 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 2 |
| B-FSD-N-101.1 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 |
| Average | 2.75 | 2.5 | 2.5 | 2.75 | 2.75 | 2.25 | 2 | 2.25 | 2 | 2 | 2 |

**CO-PSO Mapping Matrix for Course Code: B-FSD-N-101**

| COs# | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| B-FSD-N-101.1 | 3 | 3 | 2 | 3 | 3 |
| B-FSD-N-101.1 | 3 | 2 | 3 | 3 | 3 |
| B-FSD-N-101.1 | 2 | 3 | 3 | 3 | 2 |
| B-FSD-N-101.1 | 3 | 2 | 2 | 2 | 3 |
| Average | 2.75 | 2.5 | 2.5 | 2.75 | 2.75 |

### UNIT-I

Introduction to Internet and World Wide Web (WWW). Evolution and History of World Wide Web, Web Pages and Contents, Web Clients, Web Servers, Web Browsers. Hypertext Transfer Protocol, URLs. Searching and Web-Casting Techniques, Search Engines and Search Tools, Scripting Languages.

### UNIT-II

Web Publishing: Hosting Web Site. Internet Service Provider. Planning and designing Web Site. Web Content Authoring, Web Graphics Design, Web Programming, Steps For Developing Web Site, Choosing the Contents, Home Page, Domain Names, Creating a Website and Markup Languages (HTML, DHTML).

**UNIT-III**

Web Development: HTML Document Features, HTML and XHTML, Standard XHTML Document Structure, Images, Headers, Text Styles, Text Structuring, Text Colors and Background, Formatting Text, Page Layouts. Hypertext Links, Syntactic Differences between HTML and XHTML. Overview and Features of HTML.

**Unit – IV**

Images. Ordered and Unordered lists, Inserting Graphics. Table Creation and Layouts, Frame Creation and Layouts, Working with Forms and Menus, Working with Radio Buttons, Check Boxes. Text Boxes.

CSS: Introduction, Types of style sheets, Style specification formats, Font properties, List properties, Color, Alignment of text, Background images, The  and  tags, Features of CSS.

**Text Books:**


1. Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.
2. Ramesh Bangia, Multimedia and Web Technology, Firewall Media.


**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.

| B-FSD- N-102: S/W LAB-I BASED ON B-FSD- N-101 | |
|---|---|
| Type: Core Course (CC-3A)<br>Course Credits: 02<br>Contact Hours: 04 hours/week.<br>Examination Duration: 3 Hours<br>Mode: LAB<br>External Maximum Marks: 25<br>Internal Maximum Marks: 25<br>Total Max. Marks: 50<br>Total Pass Marks: 20 (i.e. 40%) | **Instructions To Examiner For End Semester Exam:** Examiner will be required to check the practical knowledge of the student by providing some assignment related to the course, checking the practical records maintained by the student and conducting a viva-voce. |
| **Course Objectives:** The aim of the course is to provide basic knowledge of C as a High level language as one of the programming tool and generating logical development skills using programming. | |
| **LAB WILL BE BASED ON CURRICULUM OF B-FSD- N-101. STUDENT WILL HAVE TO MAINTAIN THE RECORD OF ALL THE PRACTICALS CONDUCTED IN THE LAB.** | |

## B-SDE-N-201: DATA STRUCTURES USING C

Type: Core Course (CC-1B)
Course Credits: 04
Contact Hours: 04 hours/week.
Examination Duration: 3 Hours
Mode: Lecture
External Maximum Marks: 50
Internal Maximum Marks: 50
Total Max. Marks: 100
Total 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:** Learning of data structure is like learning alphabets to learn any proper language. In this course students will be aware of memory management and use of data structure in computer programming.

**Course Outcomes:** At the end of this course, the student will be able to:
B-SDE-N-201.1. learn basics of data structure and algorithm complexities.
B-SDE-N-201.2. acquire knowledge of arrays and strings.
B-SDE-N-201.3. understand the idea of implementation for linked lists and stacks.
B-SDE-N-201.4. learn various searching and sorting techniques along with implementation of queues.

**CO-PO Mapping Matrix for Course Code: B-SDE-N-201**

| COs# | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B-SDE-N-201.1 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 |
| B-SDE-N-201.2 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| B-SDE-N-201.3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 1 | 1 | 2 |
| B-SDE-N-201.4 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 2 |
| Average | 2.75 | 2.5 | 2.5 | 2.75 | 2.75 | 2.25 | 2 | 2.25 | 2 | 2 | 2 |

**CO-PSO Mapping Matrix for Course Code: B-SDE-N-201**

| COs# | PSO1 | PSO2 | PO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| B-SDE-N-201.1 | 3 | 3 | 2 | 3 | 3 |
| B-SDE-N-201.2 | 3 | 2 | 3 | 3 | 3 |
| B-SDE-N-201.3 | 2 | 3 | 3 | 3 | 2 |
| B-SDE-N-201.4 | 3 | 2 | 2 | 2 | 3 |
| Average | 2.75 | 2.5 | 2.5 | 2.75 | 2.75 |

### UNIT – I

Data Structure Definition, Data Type vs. Data Structure, Classification of Data Structures, Data Structure Operations, Applications of Data Structures;
Algorithm Specifications: Performance Analysis and Measurement (Time and Space Analysis of Algorithms- Average, Best and Worst Case Analysis), Asymptotic Notations and their use in Algorithm Handling.

### UNIT – II

Arrays: Introduction, Linear Arrays, Representation of Linear Array In Memory, Two Dimensional and Multidimensional Arrays, Sparse Matrix and its Representation, Operations on Array: Algorithm for Traversal, Selection, Insertion, Deletion and its implementation.
String Handling: Storage of Strings, Operations on Strings viz., Length, Concatenation, Substring, Insertion, Deletion, Replacement, Pattern Matching.

### UNIT – III

Linked List: Introduction, Array vs. linked list, Representation of linked lists in Memory, Traversing a Linked List, Insertion, Deletion, Searching into a Linked list, Type of Linked List.
Stack: Array Representation of Stack, Linked List Representation of Stack, Algorithms for Push and Pop, Application of Stack: Polish Notation, Postfix Evaluation Algorithms, Infix to Postfix Conversion, Infix to Prefix Conversion,

Recursion.

**UNIT – IV**

Introduction to Queues: Simple Queue, Double Queue, Circular Queue, Priority Queue, Representation of Queues as Linked List and Array, Applications of Queue. Algorithm on Insertion and Deletion in Simple Queue and Circular Queue.

Searching and Sorting Techniques, Sorting Techniques: Bubble sort, Merge sort, Selection sort, Quick sort, Insertion Sort. Searching Techniques: Sequential Searching, Binary Searching.

**Text Books:**

1. Seymour Lipschutz, Data Structures, Tata McGraw- Hill Publishing Company Limited, Schaum's Outlines.
2. Yedidyan Langsam, Moshe J. Augenstein, and Aaron M. Tenenbaum, Data Structures Using C, Pearson Education.

**Reference Books:**

1. Trembley, J.P. And Sorenson P.G., An Introduction to Data Structures With Applications, McGraw- Hill.
2. Mark Allen Weiss, Data Structures and Algorithm Analysis in C, Addison- Wesley.

| B-SDE- N-202: S/W LAB-II BASED ON B-SDE- N-201 | |
|---|---|
| Type: Core Course (CC-1B)<br>Course Credits: 02<br>Contact Hours: 04 hours/week.<br>Examination Duration: 3 Hours<br>Mode: LAB<br>External Maximum Marks: 25<br>Internal Maximum Marks: 25<br>Total Max. Marks: 50<br>Total Pass Marks: 20 (i.e. 40%) | **Instructions To Examiner For End Semester Exam:** Examiner will be required to check the practical knowledge of the student by providing some assignment related to the course, checking the practical records maintained by the student and conducting a viva-voce. |
| **Course Objectives:** The aim of the course is to provide basic knowledge of C as a High level language as one of the programming tool and generating logical development skills using programming. | |
| **LAB WILL BE BASED ON CURRICULUM OF B-SDE- N-201. STUDENT WILL HAVE TO MAINTAIN THE RECORD OF ALL THE PRACTICALS CONDUCTED IN THE LAB.** | |

**B-DSM-N-201: ADVANCED WEB TECHNOLOGIES**

Type: Core Course (CC-2B)
Course Credits: 04
Contact Hours: 04 hours/week.
Examination Duration: 3 Hours
Mode: Lecture
External Maximum Marks: 50
Internal Maximum Marks: 50
Total Max. Marks: 100
Total 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:** The objective of this course is to create dynamic web sites. Students will be able to apply their skill for the creation of dynamic web applications such as content management and user registration etc.

**Course Outcomes:** At the end of this course, the student will be able to:
B-DSM-N-201.1 learn advanced web languages like DHTML and CSS along with its components.
B-DSM-N-201.2 understand operators and control statements in PHP.
B-DSM-N-201.3 gain a detailed knowledge on arrays, functions and strings.
B-DSM-N-201.4 implement his/ her learning in PHP and MySQL.

**CO-PO Mapping Matrix for Course Code: B-DSM-N-201**

| COs# | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B-DSM-N-201.1 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 2 |
| B-DSM-N-201.2 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 1 | 2 | 2 |
| B-DSM-N-201.3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 1 | 1 |
| B-DSM-N-201.4 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| Average | 3 | 2.5 | 2.5 | 2.25 | 2 | 2.75 | 2.25 | 2.25 | 2.25 | 2 | 1.75 |

**CO-PSO Mapping Matrix for Course Code: B-DSM-N-201**

| COs# | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| B-DSM-N-201.1 | 3 | 3 | 3 | 3 | 3 |
| B-DSM-N-201.2 | 2 | 2 | 3 | 2 | 2 |
| B-DSM-N-201.3 | 2 | 3 | 3 | 3 | 2 |
| B-DSM-N-201.4 | 3 | 2 | 2 | 2 | 3 |
| Average | 2.5 | 2.5 | 2.75 | 2.5 | 2.5 |

**Unit- I**

DHTML: Introduction, Features, Events, Dynamic Positioning, Layer Object, Properties of STYLE, Dynamic Styles, Inline Styles, Event Handlers. Cascading Style Sheets (CSS): Basic Concepts, Properties, Creating Style Sheets. Common Tasks with CSS: Text, Fonts, Margins, Links, Tables, Colors. Marquee. Mouse Overs. Filters and Transitions. Adding Links. Adding Tables. Adding Forms. Adding Image and Sound. Use of CSS in HTML Documents Linking and Embedding of CSS in HTML Document.

**Unit- II**

Introduction to PHP: Advantages of PHP, HTML relationship, variable types and their scope, Types of Data, Type conversion, Type casting.
Operators, unary operators, arithmetic operators, logical operators, conditional operators, conversion operators, Comparison operators, Ternary Operator, Scope resolution operator.
Control statements – sequence, conditional statements, loops, jump statements.

**Unit- III**

Creating an array, Multidimensional arrays, Accessing array, Element Looping with Index based array, Looping with associative array using each () and foreach(), Array Library functions.
Functions and Strings: Function prototypes, arguments, Recursive functions, Mathematical conversion functions.
Strings: Basic operations on strings: Reading from part of a string, Replacing parts of a string, Finding a substring within a string, Trimming whitespace, Changing string case, Comparing strings.

**Unit- IV**

PHP & MySQL: Introduction MySQL, PhpMyAdmin, PHP MySQL functions, Connecting to a MySQL database, Performing basic database operation(DML) (Insert, Delete, Update, Select), Setting query parameter, Executing query, Join (Cross joins, Inner joins, Outer Joins, Self joins.),Aggregate Functions(sum, avg, count).
Introduction to Cookies and Sessions: Using cookies, Sessions: Starting a session, ending a session, checking session data.

**Text Books:**

1. Robert W.Sebesta, PHP Programming, Peason Education.
2. Joel Murach, Ray Harris, Murach's PHP and MySQL: Training & Reference.

**Reference Books:**

1. StevenHolzner, PHP: The Complete Reference.
2. Mario Lurig, PHP Reference: Beginner to Intermediate PHP5.

| B-DSM- N-202: S/W LAB-II BASED ON B-DSM- N-201 | |
|---|---|
| Type: Core Course (CC-2B)<br>Course Credits: 02<br>Contact Hours: 04 hours/week.<br>Examination Duration: 3 Hours<br>Mode: LAB<br>External Maximum Marks: 25<br>Internal Maximum Marks: 25<br>Total Max. Marks: 50<br>Total Pass Marks: 20 (i.e. 40%) | **Instructions To Examiner For End Semester Exam:** Examiner will be required to check the practical knowledge of the student by providing some assignment related to the course, checking the practical records maintained by the student and conducting a viva-voce. |
| **Course Objectives:** The aim of the course is to provide basic knowledge of C as a High level language as one of the programming tool and generating logical development skills using programming. | |
| **LAB WILL BE BASED ON CURRICULUM OF B-DSM- N-201. STUDENT WILL HAVE TO MAINTAIN THE RECORD OF ALL THE PRACTICALS CONDUCTED IN THE LAB.** | |

## B-FSD-N-201: PROGRAMMING WITH JAVASCRIPT

Type: Core Course (CC-3B)
Course Credits: 04
Contact Hours: 04 hours/week.
Examination Duration: 3 Hours
Mode: Lecture
External Maximum Marks: 50
Internal Maximum Marks: 50
Total Max. Marks: 100
Total 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:** The aim of the course is to develop the skill & knowledge of concepts commonly used in dynamic language programming. Student will also be able to learn about client side interfaces through the use of DOM.

**Course Outcomes:** At the end of this course, the student will be able to:
B-FSD-N-201.1 understand concept of Scripting.
B-FSD-N-201.2 acquire knowledge about fundamentals of JavaScript.
B-FSD-N-201.3 understand the applicability of various objects like window, document used in programming.
B-FSD-N-201.4 acquire the skills that will enable him to design and build high-level web enabled applications.

**CO-PO Mapping Matrix for Course Code: B-FSD-N-201**

| COs# | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B-FSD-N-201.1 | 3 | 3 | 2 | 3 | 1 | 3 | 2 | 3 | 2 | 1 | 2 |
| B-FSD-N-201.2 | 3 | 3 | 3 | 3 | 1 | 3 | 2 | 2 | 2 | 1 | 2 |
| B-FSD-N-201.3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 2 |
| B-FSD-N-201.4 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 |
| Average | 3 | 3 | 2.75 | 3 | 1.5 | 3 | 2 | 2.5 | 2 | 1.25 | 2.25 |

**CO-PSO Mapping Matrix for Course Code: B-FSD-N-201**

| COs# | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| B-FSD-N-201.1 | 3 | 3 | 2 | 3 | 3 |
| B-FSD-N-201.2 | 3 | 2 | 3 | 3 | 3 |
| B-FSD-N-201.3 | 2 | 3 | 3 | 3 | 2 |
| B-FSD-N-201.4 | 3 | 2 | 2 | 2 | 3 |
| Average | 2.75 | 2.5 | 2.5 | 2.75 | 2.75 |

### UNIT – I

The Nature of JavaScript: Evolution of Scripting Languages, JavaScript -Definition, Programming for Non-Programmers, Introduction to Client–Side Programming, Comparison between Java, JavaScript & VB Script. Enhancing HTML Documents with JavaScript. Static and Dynamic web pages.

### UNIT – II

Introduction to JavaScript: Document Object Model (DOM), obtaining user inputs, memory concepts, Character set, case sensitivity, comments, Literals, Expression & Operators, Control Structures, looping constructs, break, continue statements, variables, Data types, Keywords.

### UNIT – III

JavaScript types, merge multiple JavaScript into one, Running Scripts, Methods, and Events, Introduction to Objects: String, Date, Boolean, Window, document and various Object interaction.

### UNIT – IV

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| Array declaration and allocation, passing arrays to function, Scoping rules, Recursion and iteration, cookies, Form Validation: Basic validation, Data validation. Introduction to XML. |
| **Text Books:**<br>1. David Flanagan, JavaScript: The Definitive Guide: The Definitive Guide.<br>2. Chris Bates, Web Programming, Building Internet Applications, WILEY. |
| **Reference Books:**<br>1. Kogent Learning, Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML, AJAX – Black Book, Wiley India Pvt. Ltd. |

| B-FSD- N-202: S/W LAB-II BASED ON B-FSD- N-201 | |
|---|---|
| Type: Core Course (CC-3B)<br>Course Credits: 02<br>Contact Hours: 04 hours/week.<br>Examination Duration: 3 Hours<br>Mode: LAB<br>External Maximum Marks: 25<br>Internal Maximum Marks: 25<br>Total Max. Marks: 50<br>Total Pass Marks: 20 (i.e. 40%) | **Instructions To Examiner For End Semester Exam:** Examiner will be required to check the practical knowledge of the student by providing some assignment related to the course, checking the practical records maintained by the student and conducting a viva-voce. |
| **Course Objectives:** The aim of the course is to provide basic knowledge of C as a High level language as one of the programming tool and generating logical development skills using programming. | |
| **LAB WILL BE BASED ON CURRICULUM OF B-FSD- N-201. STUDENT WILL HAVE TO MAINTAIN THE RECORD OF ALL THE PRACTICALS CONDUCTED IN THE LAB.** | |