**NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA, GAUTAM BUDDH NAGAR**
**(AN AUTONOMOUS INSTITUTE)**

**Affiliated to**

**DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW**

# Evaluation Scheme & Syllabus

For

## Bachelor of Computer Applications

## Second Year

**(Effective from the Session: 2025-26)**

# NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA, GAUTAM BUDDH NAGAR
# (AN AUTONOMOUS INSTITUTE)

## Bachelor of Computer Applications
## Evaluation Scheme
### SEMESTER-III

| Sl. No. | Subject Codes | Subject | Types of Subjects | Periods | | | Evaluation Schemes | | | | End Semester | | Total | Credit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | T | P | CT | TA | TOTAL | PS | TE | PE | | |
| 1 | BBCA0303 | Operating System | Mandatory | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 2 | BBCA0301 | Current Trends & Practices in IT | Mandatory | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 3 | BBCA0302 | Environmental Science and sustainability | Mandatory | 2 | 0 | 0 | 30 | 20 | 50 | | 50 | | 100 | 2 |
| 4 | | Departmental Elective - I | Departmental Elective | 3 | 0 | 0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 5 | BBCA0351 | Object Oriented Programming using Java | Mandatory | 0 | 0 | 6 | | | | 50 | | 100 | 150 | 3 |
| 6 | BBCA0352 | Personality Development and Professional Skills | Mandatory | 0 | 0 | 4 | | | | 50 | | 50 | 100 | 2 |
| 7 | BBCA0353 | Operating System Lab | Mandatory | 0 | 0 | 4 | | | | 50 | | 50 | 100 | 2 |
| 8 | BBCA0354 | Workplace Communication Lab 3 | Departmental Elective | 0 | 0 | 4 | | | | 50 | | 50 | 100 | 2 |
| 9 | | Departmental Elective – I Lab | Departmental Elective | 0 | 0 | 4 | | | | 50 | | 50 | 100 | 2 |
| | | MOOCs | | | | | | | | | | | | |
| | | **TOTAL** | | | | | | | **200** | **250** | **350** | **300** | **1100** | **24** |

*** List of MOOCs Based Recommended Courses for Second year (Semester-III) B.C.A Students**

| Sr. No. | Subject Code | Course Name | University / Industry Partner Name | No of Hours | Credits |
|---|---|---|---|---|---|
| 1 | BMC0057 | Customer Relationship Management | Infosys Wingspan (Infosys Springboard) | 5h 18m | |
| 2 | BMC0056 | Introduction to Artificial Intelligence | Infosys Wingspan (Infosys Springboard) | 6h 18m | |

**Abbreviation Used:**

L: Lecture, T: Tutorial, P: Practical, CT: Class Test, TA: Teacher Assessment, PS: Practical Sessional, TE: Theory End Semester Exam., CE: Core Elective, OE: Open Elective, DE: Departmental Elective, PE: Practical End Semester Exam, CA: Compulsory Audit, MOOCs: Massive Open Online Courses.

# List of Departmental Electives

| Sl. No. | Subject Codes | Subject Name | Types of Subjects | Bucket Name | Branch | Semester |
|---|---|---|---|---|---|---|
| 1 | BBCA0311 | CRM Fundamentals | Departmental Elective-I | CRM/RPA | BCA | III |
| 2 | BBCA0312 | Canva & Corel draw | Departmental Elective-I | Graphics & Video editing | BCA | III |
| 3 | BBCA0313 | Artificial Intelligence | Departmental Elective-I | Emerging Technologies | BCA | III |
| 4 | BBCA0314 | CRM Fundamentals Lab | Departmental Elective-I | CRM/RPA Lab | BCA | III |
| 5 | BBCA0315 | Canva & Corel draw Lab | Departmental Elective-I | Graphics & Video editing Lab | BCA | III |
| 6 | BBCA0316 | Artificial Intelligence Lab | Departmental Elective-I | Emerging Technologies Lab | BCA | III |

# NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA, GAUTAM BUDDH NAGAR
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## Bachelor of Computer Applications
## Evaluation Scheme
### SEMESTER-IV

| Sl. No. | Subject Codes | Subject | Types of Subjects | Periods | | | Evaluation Schemes | | | | End Semester | | Total | Credit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | T | P | CT | TA | TOTAL | PS | TE | PE | | |
| 1 | BBCA0402 | Database Management System | Mandatory | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 2 | BBCA0403 | Digital Marketing & SEO | Mandatory | 3 | 0 | 0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 3 | BBCA0404 | Data Science | Mandatory | 3 | 0 | 0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 4 | BBCA0401 | Cognitive Ability | Mandatory | 3 | 0 | 0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 5 | | Departmental Elective - II | Departmental Elective | 3 | 0 | 0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 6 | BBCA0451 | Web Technologies | Mandatory | 0 | 0 | 6 | | | | 50 | | 100 | 150 | 3 |
| 7 | BBCA0452 | Database Management System Lab | Mandatory | 0 | 0 | 4 | | | | 50 | | 50 | 100 | 2 |
| 8 | | Departmental Elective - II Lab | Departmental Elective | 0 | 0 | 2 | | | | 50 | | 50 | 100 | 1 |
| 9 | BBCA0453 | Workplace Communication Lab 4 | Mandatory | 0 | 0 | 4 | | | | 50 | | 50 | 100 | 2 |
| | | MOOCs | | | | | | | | | | | | |
| | | **TOTAL** | | | | | | | **250** | **200** | **500** | **250** | **1200** | **24** |

*** List of MOOCs Based Recommended Courses for Second year (Semester-IV) B.C.A Students**

| S. No. | Subject Code | Course Name | University / Industry Partner Name | No of Hours | Credits |
|---|---|---|---|---|---|
| 1 | BMC0089 | Machine Learning Fundamentals | Infosys Wingspan (Infosys Springboard) | 4h 27m | |
| 2 | BMC0105 | Zoho CRM System Administrator Training | Infosys Wingspan (Infosys Springboard) | 6h 24m | |

**Abbreviation Used:**

L: Lecture, T: Tutorial, P: Practical, CT: Class Test, TA: Teacher Assessment, PS: Practical Sessional, TE: Theory End Semester Exam., CE: Core Elective, OE: Open Elective, DE: Departmental Elective, PE: Practical End Semester Exam, CA: Compulsory Audit, MOOCs: Massive Open Online Courses.

## List of Departmental Electives: -

| Sl. No. | Subject Codes | Subject Name | Types of Subjects | Bucket Name | Branch | Semester |
|---|---|---|---|---|---|---|
| 1 | BBCA0411 | CRM Administration | Departmental Elective | CRM/RPA | BCA | IV |
| 2 | BBCA0412 | Image Editing with Photoshop | Departmental Elective | Graphics & Video editing | BCA | IV |
| 3 | BBCA0413 | Machine Learning | Departmental Elective | Emerging Technologies | BCA | IV |
| 4 | BBCA0414 | CRM Administration Lab | Departmental Elective | CRM/RPA Lab | BCA | IV |
| 5 | BBCA0415 | Image Editing with Photoshop Lab | Departmental Elective | Graphics & Video editing Lab | BCA | IV |
| 6 | BBCA0416 | Machine Learning Lab | Departmental Elective | Emerging Technologies Lab | BCA | IV |

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**School of Computer Applications**

| **Course Code:** BBCA0303 | **Course Name: Operating System** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **3** | **1** | **0** | **4** |

**Pre-requisite:** Basic knowledge of Operating System, Familiarity with system software and command-line interfaces.

**Course Objectives: T**o provide students with comprehensive understanding of operating system concepts, principles, and architectures across various platforms including DOS, Windows, and Unix/Linux. To develop practical skills in utilizing different user interfaces, computing environments, and system calls required for effective interaction with operating systems. To foster analytical and implementation abilities in core operating system functionalities including process management, memory management, and file system operations.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Recall and recognize basic concepts of operating systems including their types, evolution, and functions | K1 |
| **CO2** | Apply concepts of user interfaces and implement programs using system calls in different computing environments | K3 |
| **CO3** | Analyze and implement process management techniques and CPU scheduling algorithms | K4 |
| **CO4** | Implement memory management techniques and page replacement algorithms | K4 |
| **CO5** | Analyze file system structures and implement various file allocation and management techniques | K4 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **1** | **2** | **1** | **1** | **1** | **2** |
| **CO2** | **3** | **2** | **2** | **3** | **2** | **1** | **2** | **2** |
| **CO3** | **3** | **3** | **3** | **3** | **2** | **1** | **2** | **2** |
| **CO4** | **3** | **3** | **3** | **3** | **2** | **1** | **2** | **2** |
| **CO5** | **3** | **3** | **3** | **3** | **2** | **1** | **2** | **2** |

**Course Contents / Syllabus**

| **Module 1** | **Introduction to Operating Systems** | **8 hours** |
|---|---|---|

Introduction to Operating System, Goals, Evolution of Operating System, Functions of Operating System, Types of Operating Systems - Batch Processing, Multiprogramming, Multitasking, Time Sharing, Real Time, Multiprocessor, Distributed, Windows, DOS, Unix/Linux, System Calls

| **Module 2** | **User Interface & Computing Environments** | **8 hours** |
|---|---|---|

User Interfaces - Command User Interface (CUI), Graphical User Interfaces (GUI), Difference between CUI and GUI, Computing Environments, Traditional Computing, Client-Server Computing, Peer-to-Peer Computing, Web-based Computing,

| **Module 3** | **Process Management** | **8 hours** |
|---|---|---|

Program Vs Process, Process States, Process State Transition Diagram, Process Control Block, Context Switching, Inter-Process Communication - Shared Memory & Message Passing System, CPU scheduling algorithms (FCFS, SJF, Priority, Round Robin), Scheduling criteria

| **Module 4** | **Memory Management** | **8 hours** |
|---|---|---|

Memory hierarchy, Memory allocation schemes, Fixed and variable partitions, Paging, Virtual memory concepts, Page replacement algorithms (FIFO)

| **Module 5** | **File Systems** | **8 hours** |
|---|---|---|

File concepts, File operations, Directory structures, File system implementation, Allocation methods, Free space management, File protection

| **Total Lecture Hours** | **40 hours** |
|---|---|

**Textbook:**

| **S.No** | **Book Title** | **Author** |
|---|---|---|

| | | |
|---|---|---|
| **1** | "Operating System Concepts" John Wiley & Sons Inc; 10th edition (9 February 2021) | Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, |
| 2 | "Modern Operating Systems", Pearson Education, 3rd Edition, (2008) | Andrew S. Tanenbaum |
| 3 | "Linux for Beginners: An Introduction to the Linux Operating System and Command Line", (2014) | Jason Cannon |

**Reference Books:**

| **S.No** | **Book Title** | **Author** |
|---|---|---|
| 1 | "Operating Systems: Internals and Design Principles", 7th Edition, (2011) | William Stallings |
| 2 | "Operating Systems", Pearson Education, (2010) | Sibsankar Haldar, Alex A. Aravind, |
| 3 | "Linux System Programming", O'Reilly Media, 2nd Edition, (2013) | Robert Love, |
| 4 | "The UNIX Programming Environment", Prentice Hall, (1984) | Brian W. Kernighan, Rob Pike, |
| 5 | "Linux Fundamentals", (2015) | Paul Cobbaut, |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://nptel.ac.in/courses/106105214 |
| **Module 2** | https://archive.nptel.ac.in/courses/106/105/106105214/ |
| **Module 3** | https://www.youtube.com/watch?v=xw_OuOhjauw&t=20764s |
| **Module 4** | https://www.youtube.com/watch?v=a3YDvmKbGrA&list=PL3eEXnCBViH-SiXK96TZd-7k3Qvk5g1YH |
| **Module 5** | https://www.youtube.com/watch?v=3obEP8eLsCw |

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## GREATER NOIDA-201306
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### School of Computer Applications

| **Course Code:** BBCA0301 | **Course Name: Current Trends & Practices in IT** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **3** | **1** | **0** | **4** |

**Pre-requisite:** A fundamental understanding of core Information Technology concepts such as programming, databases, networking, and software development is required.

**Course Objectives**: The objective of this subject is to familiarize students with the latest developments, emerging technologies, and best practices in the field of Information Technology. It aims to equip learners with the knowledge needed to adapt to dynamic industry trends and apply innovative solutions in real-world IT environments.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describe the evolution and significance of emerging technologies in IT | K2 |
| **CO2** | Compare various cloud service and deployment models | K3 |
| **CO3** | Analyze different approaches in Artificial Intelligence and Machine Learning | K4 |
| **CO4** | Identify common cyber threats and evaluate cybersecurity mechanisms | K2 |
| **CO5** | Apply data analytics tools and techniques | K3 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **1** | **2** | **1** | **1** | **1** | **2** |
| **CO2** | **3** | **2** | **2** | **3** | **2** | **2** | **1** | **2** |
| **CO3** | **3** | **3** | **3** | **3** | **2** | **1** | **2** | **3** |
| **CO4** | **2** | **3** | **2** | **2** | **1** | **1** | **3** | **2** |
| **CO5** | **3** | **2** | **3** | **3** | **2** | **2** | **2** | **3** |

**Course Contents / Syllabus**

| **Module 1** | **Emerging Trends in Information Technology** | **8 hours** |
|---|---|---|

Introduction to emerging technologies in IT, evolution of computing and digital transformation, Internet of Things (IoT) and its applications, blockchain fundamentals, augmented and virtual reality, Grid Computing, Edge computing, Quantum computing concepts.

| **Module 2** | **Cloud Computing and Virtualization** | **8 hours** |
|---|---|---|

Basics of cloud computing, service models – IaaS, PaaS, SaaS, deployment models – public, private, hybrid cloud, introduction to leading cloud platforms – AWS, Azure, Google Cloud, virtualization concepts, introduction to containerization using Docker, orchestration using Kubernetes.

| **Module 3** | **Artificial Intelligence (AI) and Machine Learning (ML)** | **8 hours** |
|---|---|---|

The foundational concepts of Artificial Intelligence and Machine Learning, exploring various types of AI like supervised, unsupervised, and reinforcement learning, along with deep learning architectures. Key subjects covered include algorithms, data preprocessing, model evaluation metrics, natural language processing (NLP), computer vision, and the ethical implications of AI.

| **Module 4** | **Cybersecurity and Data Privacy** | **8 hours** |
|---|---|---|

Types of cyber threats – phishing, malware, ransomware, security mechanisms – firewalls, encryption, intrusion detection systems, ethical hacking basics, cyber laws and regulations, introduction to data privacy laws – GDPR (General Data Protection Regulation), importance of cybersecurity in business and personal data protection.

| **Module** 5 | **Data Analytics and IT Applications** | **8 hours** |
|---|---|---|

Fundamentals of data analytics and business intelligence, overview of big data, data visualization tools – Tableau, Google Data Studio, introduction to data science workflow, applications of IT in healthcare, education, smart cities, sustainable computing, role of IT in Industry 4.0.

| **Total Lecture Hours** | **40 hours** |
|---|---|

**Textbook:**

| **S.No** | **Book Title** | **Author** |
|---|---|---|
| **1** | Internet of Things: A Hands-On Approach, VPT (Vijay Madisetti Publishing) 1st Edition 2014 | Arshdeep Bahga, Vijay Madisetti |

| | | |
|---|---|---|
| **2** | Cloud Computing: Concepts, Technology & Architecture, Prentice Hall ,1st Edition 2013, | Thomas Erl |
| **3** | Artificial Intelligence: A Modern Approach, Pearson 4th Edition 2020 | Stuart Russell, Peter Norvig |

**Reference Books:**

| **S.No** | **Book Title** | **Author** |
|---|---|---|
| **1** | Cybersecurity Essentials, Sybex (John Wiley & Sons) 1st Edition 2018 | Charles J. Brooks et al. |
| **2** | Data Analytics Made Accessible,2025 Edition | Anil Maheshwari |
| **3** | Quantum Computing for Everyone, MIT Press 1st edition 2020 | Chris Bernhardt |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://nptel.ac.in/courses/106105166 |
| **Module 2** | https://nptel.ac.in/courses/102105099 |
| **Module 3** | https://nptel.ac.in/courses/106104242 |
| **Module 4** | https://onlinecourses.nptel.ac.in/noc22_cs53/preview |
| **Module 5** | https://nptel.ac.in/courses/109105595 |

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| **Course Code:** BBCA0302 | **Course Name:** Environmental Science and sustainability | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **2** | **0** | **0** | **2** |

**Pre-requisite:**

Basic knowledge of biology, chemistry, ecology, geology, mathematics, and understanding of human impacts on natural systems.

| **Course Outcome- After completion of the course, the student will be able to To understand ecosystems, promote sustainability, address environmental issues, conserve biodiversity, and ensure responsible use of natural resources for future generations.:** | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Understand the basic principles of ecology and environment. Ecosystem: Basic concepts, components of ecosystem, food chains and food webs. Ecological pyramids, biodiversity. | K1,K2 |
| **CO2** | Understand the different types of natural recourses like food, forest, Minerals and energy and their conservation. | K1,K2 |
| **CO3** | Understand the different types of pollution, pollutants, their sources, effects and their control methods. | K1,K2 |
| **CO4** | Understand the basic concepts of sustainable development, Environmental Impact Assessment (EIA) and different acts related to environment | K1,K2 |

**CO-PO Mapping**

| **CO/PO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 3 | 2 | 2 | 1 | 3 | 3 | 2 |
| **CO2** | 3 | 3 | 2 | 2 | 1 | 3 | 3 | 2 |
| **CO3** | 3 | 3 | 2 | 2 | 1 | 3 | 3 | 3 |
| **CO4** | 3 | 3 | 2 | 2 | 1 | 3 | 3 | 2 |

**Course Contents / Syllabus**

| **Module 1** | **Basic Principle of Ecology and Biodiversity** | **4 hours** |
|---|---|---|

Definition, Scope and basic principles of ecology and environment. Ecosystem: Basic concepts, components of ecosystem. Food chains and food. Webs. Ecological pyramids, Energy flow in ecological systems, Characteristics of different ecosystems. Biogeochemical Cycles: Importance, gaseous and sedimentary cycles. Carbon, Nitrogen, Phosphorus and Sulphur Cycles. Biodiversity and their importance, Threats to biodiversity, major causes, extinction's, vulnerability of species to extinction, IUCN threat categories, Red data book. Strategies for biodiversity conservation, principles of biodiversity conservation in-situ and ex-situ conservation strategies Mega diversity zones and Hot spots, concepts, distribution and importance.

| **Module 2** | **Natural Resources and Ecological succession** | **4 hours** |
|---|---|---|

Natural resources and associated problems. Forest resources: Use and over- exploitation, deforestation. Timber extraction, mining, dams and their effects on forest and tribal people. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. Food resources: World food problems, changes caused by agriculture and over- grazing, effects of modern agriculture, fertilizer-pesticide problems,

water logging, salinity.Land resources: Land as a resource, land degradation, man induced landslides. Equitable use of resources for sustainable lifestyles.

Non-Renewable Energy Resources: Fossil fuels and their reserves, Nuclear energy, types, uses and effects, Renewable Energy Resources: hydropower, Solar energy, geothermal, tidal and wind energy, Biomass energy, biogas and its advantages. Ecological succession-Types, stages, examples of ecological succession

| **Module 3** | **Pollution and Waste Management** | **4 hours** |
|---|---|---|

Air pollution: sources of air pollution, Primary and secondary air pollutants. Origin and effects of SOX, NOX, Cox,CFC, Hydrocarbon, control of air pollution. Water pollution: sources and types of water pollution, Effects of water pollution, Eutrophication, Soil pollution: Causes of soil pollution, Effects of soil pollution, Major sources of and effects of noise pollution on health, Radioactive and thermal pollution sources and their effects on surrounding environment. Solid waste disposal and its effects on surrounding environment, Introduction to E- Waste, Types and classification of E- Waste, Impacts of E- Waste on environment and human health,E-Waste management and recycling., Climate change, global warming, acid rain, ozone layer depletion.

| **Module 4** | **Environmental Assessment, Legislation and Sustainability** | **4 hours** |
|---|---|---|

Women education, Role of NGOs regarding environmental protection, Bio indicators and their role, Natural disasters and disasters management, Aims and objectives of Environmental Impact Assessment (EIA). Salient features of following Acts: Environmental Protection Act, 1986, Wildlife (Protection) Act, 1972.Water (Prevention and control of pollution) Act, 1974. Forest (Conserving) Act, 1980.
Definition and concept of sustainability, impacted areas of sustainable development, Global initiative and issues on sustainable development UNSDsGs, System Thinking and Sustainability.

| | **Total Lecture Hours** | **20 hours** |
|---|---|---|

**Textbook:**

| **S.No** | **Book Title** | **Author** |
|---|---|---|
| **1** | Brady, N.C. 1990. The nature and properties of Soils, Tenth Edition. Mac Millan Publishing Co., New York | Brady, N.C |
| **2** | Sodhi G.S. 2005, Fundamentals of Environmental Chemistry: Narosa Publishing House, New Delhi. | Sodhi G.S |
| **3** | Dash, M.C. (1994), Fundamentals of Ecology, Tata Mc Graw Hill, New Delhi. | Dash, M.C |

| **S.No** | | |
|---|---|---|
| **1** | Rao M.N. and H.V.N. Rao, 1989 : Air Pollution, Tata McGraw Hill Publishing Co. Ltd., New Delhi | Rao M.N. and H.V.N. Rao |
| **2** | A Text Book of environmental Science By Shashi Chawla | Shashi Chawla |

| **Module 1:** | https://www.youtube.com/watch?v=T21OO0sBBfc, https://www.youtube.com/watch?v=qt8AMjKKPDo |
|---|---|

| | |
|---|---|
| **Module 2:** | https://www.youtube.com/watch?v=mOwyPENHhbc,<br>https://www.youtube.com/watch?v=yqev1G2iy2<br>https://www.youtube.com/watch?v=_74S3z3IO_I,<br>https://www.youtube.com/watch?v=jXVw6M6m2 |
| **Module 3:** | https://www.youtube.com/watch?v=7qkaz8ChelI,<br>https://www.youtube.com/watch?v=NuQE5fKmfME<br>https://www.youtube.com/watch?v=9CpAjOVLHII,<br>ttps://www.youtube.com/watch?v=yEci6iDkXYw |
| **Module 4:** | https://www.youtube.com/watch?v=ad9KhgGw5iA,<br>https://www.youtube.com/watch?v=nW5g83NSH9 M,<br>https://www.youtube.com/watch?v=xqSZL4Ka8xo |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
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| Course Code: BBCA0311 | Course Name: CRM Fundamentals | L | T | P | C |
|---|---|---|---|---|---|
| Course Offered in: BCA | | 3 | 0 | 0 | 3 |

**Pre-requisite:** Basic knowledge of Computer and Programming Language.

**Course Objectives:** The objective of this course is to provide a comprehensive understanding of Customer Relationship Management (CRM) and its role in enhancing customer relationships and driving business growth. It covers the impact of CRM on increasing sales, improving customer retention, and its integration with other marketing aspects. The course also explores the fundamentals of Salesforce as a key CRM platform and addresses governance and security risks to ensure data protection and compliance.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describe the importance of CRM. | K2 |
| **CO2** | Identify the basic knowledge of the Role of CRM in increasing the sales of the company | K1 |
| **CO3** | Describe the CRM link with the other aspects of marketing and analyze the different issues in CRM | K2 |
| **CO4** | Describe the importance of Salesforce | K2 |
| **CO5** | Discuss the knowledge about value of Governance and Security risk. | K2 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 |
| CO2 | 2 | 2 | 3 | 2 | 1 | 3 | 1 | 2 |
| CO3 | 2 | 3 | 3 | 2 | 2 | 2 | 1 | 2 |
| CO4 | 2 | 2 | 3 | 3 | 1 | 2 | 1 | 3 |
| CO5 | 1 | 2 | 2 | 3 | 1 | 2 | 3 | 3 |

**Course Contents / Syllabus**

| Module 1 | CRM Introduction | 8 hours |
|---|---|---|

Customer Relationship Management: Evolution of Relationship Marketing, Purpose, stages Issues of Relationship A Paradigm Shift, Historical Perspective, CRM Definitions, Emergence of CRM Practice, CRM Cycle, Stake holders In CRM, Significance and Types of CRM, Success Factors in CRM. Emerging Perspective: Employee-Organization Relationship, Factors effecting employee Customer Oriented Behaviour, Service Recovery Management, Customer Relationship Management in Retail Industry E-CRM in Business, Features, Technology, Advantages of E-CRM, Customer Relationship Portal, Important CRM Software

| Module 2 | CRM Concepts | 8 hours |
|---|---|---|

Customer Value, Customer Expectation, Customer Satisfaction, Customer Centricity, Customer Acquisition, Customer Retention, Customer Loyalty, Customer Lifetime Value. Customer Experience Management, Customer Profitability, Enterprise Marketing Management, Customer Satisfaction Measurements, Web based Customer Support.

| Module 3 | CRM Planning and Implementation | 8 hours |
|---|---|---|

Steps in Planning-Building Customer Centricity, Setting CRM Objectives, Defining Data Requirements, Planning Desired Outputs, Relevant issues while planning the Outputs, Elements of CRM plan, CRM Strategy: The Strategy Development Process.

Issues and Problems in implementing CRM, Information Technology tools in CRM, Challenges of CRM Implementation.

| Module 4 | Sales force Platform Basic | 8 hours |
|---|---|---|

**Sales force Platform Basic:** Get Started with the Sales force Platform, Discover Use Cases for the Platform, Understand the Sales force Architecture, Navigate Setup, Power Up with AppExchange

**Trailhead Basic**: Get Started with Trailhead Find Your Way Around Trailhead Troubleshoot and Find Answers to Common Questions Sales force User Basic Welcome to Sales force, Get Started with Sales force, Work With your Sales force Admin

| Module 5 | Security & Governance | 8 hours |
|---|---|---|

**Governance Basic:** Understand the Value of Governance Learn Governance Roles and Responsibilities Understand the Key Components of a Lean Governance Framework.

| | | |
|---|---|---|
| **Security Basic:** Understand Security Risk Educate Your Users to Help Protect Your Org Choose the Right Sales force Security Settings Use Health Check to Scan Your Security Configurations | | |
| **Total Lecture Hours** | | **40 hours** |
| **Textbook:** | | |
| **S.No** | **Book Title** | **Author** |
| **1.** | Customer Relationship Management: Concepts and Technologies, Routledge 4th Edition 2019 | Francis Buttle, Stan Makan, Fourth Edition 2019 |
| **2.** | Werner Customer Relationship Management Concept, Strategy and Tools, Springer 3rd Edition 2018 | Kumar, V., Reinartz, |
| **Reference Books:** | | |
| **S.No** | **Book Title** | **Author** |
| **1.** | Customer Relationship Management, PHI Learning Pvt. Ltd. 2nd Edition 2013 | Alok Kumar Rai |
| **2.** | Salesforce for beginners, Packt Publishing 2nd Edition 2022 | Sharif Shaalan |
| NPTEL/ Youtube/ Faculty Video Link: | | |
| **Module 1** | https://www.youtube.com/watch?v=sQD7kaZ5h0s&ab_channel=Simplilearn | |
| **Module 2** | https://www.youtube.com/watch?v=zFfs_xffUfQ&ab_channel=HORIZONCLASSES | |
| **Module 3** | https://www.youtube.com/watch?v=VpLdS4r4-yk&ab_channel=CynoteckTechnologySolutions | |
| **Module 4** | https://www.youtube.com/watch?v=Bhx055rMQEo&ab_channel=Intellipaat | |
| **Module 5** | https://www.youtube.com/watch?v=M87nCQi4vaM&ab_channel=InspirateSolution | |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **Course Code:** BBCA0312 | **Course Name: Canva & CorelDRAW** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **3** | **0** | **0** | **3** |

**Pre-requisite:** Basic computer skills, internet access, and a creative mindset**.**

**Course Objectives:** The objective of this syllabus is to equip learners with essential graphic design skills using Canva and CorelDRAW, enabling them to create professional designs for digital and print media. It focuses on both fundamental and advanced techniques to prepare students for industry applications and portfolio development.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describe the basic design principles, color theory, and Canva interface. | K2 |
| **CO2** | Apply Canva tools to create professional social media graphics, presentations, and animations. | K3 |
| **CO3** | Analyze vector and raster graphics and create simple vector illustrations using CorelDRAW. | K4 |
| **CO4** | Develop branding materials like logos, brochures, and business cards using advanced CorelDRAW tools. | K5 |
| **CO5** | Design a professional portfolio with real-world applications in digital and print media. | K6 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **1** | **3** | **-** | **-** | **-** | **2** |
| **CO2** | **3** | **2** | **2** | **3** | **2** | **-** | **-** | **2** |
| **CO3** | **3** | **3** | **3** | **3** | **-** | **-** | **-** | **2** |
| **CO4** | **3** | **3** | **3** | **3** | **2** | **-** | **-** | **2** |
| **CO5** | **3** | **3** | **3** | **3** | **3** | **-** | **-** | **3** |

**Course Contents / Syllabus**

| **Module 1** | **Graphic Design & Canva** | **8 hours** |
|---|---|---|

Basics of Graphic Design, Importance of Visual Communication, Overview of Canva & Its Interface, Creating & Customizing Designs, Working with Templates, Text, and Elements, Exporting & Sharing Designs.

| **Module 2** | **Advanced Canva Features & Applications** | **8 hours** |
|---|---|---|

Designing Social Media Posts, Presentations, and Flyers, Using Canva Pro Features (Brand Kit, Background Remover), Animation & Video Creation, Collaborating in Teams, Canva Apps & Integrations.

| **Module 3** | **CorelDRAW & Vector Graphics** | **8 hours** |
|---|---|---|

Understanding Vector Graphics & Raster Graphics, CorelDRAW Interface & Tools, Creating & Editing Shapes, Working with Colors, Fills, and Gradients, Importing & Exporting Files.

| **Module 4** | **Advanced CorelDRAW Techniques** | **8 hours** |
|---|---|---|

Working with Text & Typography Effects, Image Tracing & Logo Design, Advanced Shape Editing (Weld, Trim, Intersect), Creating Brochures, Banners, and Business Cards, Printing & Prepress Techniques.

| **Module 5** | **Project Work & Practical Applications** | **8 hours** |
|---|---|---|

Designing a Full Branding Kit (Logos, Business Cards, Flyers), Creating Social Media & Marketing Graphics, UI/UX Wireframes using Canva & CorelDRAW,Portfolio Development.

| **Total Lecture Hours** | **40 hours** |
|---|---|

**Textbook:**

| **S. No** | **Book Title** | **Author** |
|---|---|---|
| **1.** | A Step-by-Step Guide on Canva with an Illustrative Approach: Essential Skills for Beginners and Digital Marketers, 1st Edition 2023 | David White |

| | | |
|---|---|---|
| **2.** | Mastering Canva: A Comprehensive Guide to Creating Professional Designs, 1st 2024 | Sarah Parker |
| **3.** | CorelDRAW 2024 - Training Book with Many Exercises: Also Suitable for Essentials 2024 and Home and Student 2024 | Peter Schiess |

**Reference Books:**

| **S. No** | **Book Title** | **Author** |
|---|---|---|
| **1.** | Canva for Work: Designing Professional Graphics Made Easy | Emily Green |
| **2.** | CorelDRAW 10: The Official Guide, McGraw-Hill Education 12th Edition 2017 | Steve Bain |
| **3.** | CorelDRAW X8: The Official Guide, McGraw-Hill Education 12th Edition 2017 | Gary David Bouton |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | **https://www.youtube.com/watch?utm_source=chatgpt.com** |
| **Module 2** | **https://www.youtube.com/watch?v=Llnmf5BXLBA** |
| **Module 3** | **https://www.youtube.com/watch?v=LhNnEibdrpk&t=4s** |
| **Module 4** | **https://www.youtube.com/watch?v=lC2hi1YTVn8** |
| **Module 5** | **https://www.youtube.com/watch?v=zMcuy4AvVpQ** |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| Course Code: BBCA0313 | Course Name: Artificial Intelligence | L | T | P | C |
|---|---|---|---|---|---|
| Course Offered in: BCA | | 3 | 0 | 0 | 3 |

**Pre-requisite:** Basic Knowledge of Transform techniques

**Course Objectives:** Introductory knowledge of the historical perspective of AI and its foundations, and familiarity with principles of AI toward problem solving, inference, perception, knowledge representation, and learning. Acquiring knowledge of various forms of learning and computational statistics.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describe the history of artificial intelligence (AI) and its foundations | K2 |
| **CO2** | Apply principles of AI in solutions that require problem solving, inference and perception. | K3 |
| **CO3** | Explain strong familiarity with some important AI techniques, including in particular, intelligent search methods and solutions | K2 |
| **CO4** | Apply the concepts of knowledge & reasoning of predicate logic and representing knowledge using rules, Probabilistic reasoning | K3 |
| **CO5** | Evaluate critically the techniques presented and apply them to real-world problems | K5 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | 2 | - | - | 1 | 2 |
| CO2 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 2 |
| CO3 | 3 | 3 | 2 | 3 | 1 | - | 1 | 2 |
| CO4 | 3 | 2 | 2 | 3 | 1 | - | 1 | 2 |
| CO5 | 3 | 3 | 3 | 2 | 2 | 1 | 2 | 3 |

**Course Contents / Syllabus**

| Module 1 | Introduction | 8 hours |
|---|---|---|

Introduction to Artificial Intelligence, Historical developments of Artificial Intelligence, well-defined learning problems, Designing a Learning System, Basics of problem-solving: problem representation paradigms, state space, Problem reduction, Constraint satisfaction, Applications of AI

| Module 2 | Search Techniques | 8 hours |
|---|---|---|

Searching for solutions, Uninformed Search Strategies: DFS, BFS, Informed Search Strategies: Local search algorithms and optimistic problems, adversarial Search, Search for games, minimax, Alpha-Beta pruning, Heuristic Search techniques, Hill Climbing, Best-first search, Means Ends Analysis, Iterative deepening Heuristic Search and A*.

| Module 3 | Logic and Knowledge Representation | 8 hours |
|---|---|---|

Introduction of Logic, Propositional Logic Concepts, Semantic Tableaux and Resolution in Propositional logic, FOPL, Semantic Tableaux and Resolution in FOPL, Logic Programming in Prolog. Production systems and rules for some AI problems: Water Jug Problem, Missionaries-Cannibals Problem, n-Queen problem, monkey banana problem, Travelling Salesman Problem. Knowledge representation, semantic nets, partitioned nets, parallel implementation of semantic nets. Frames, Common Sense reasoning and thematic role frames.

| Module 4 | Expert System | 8 hours |
|---|---|---|

Architecture of knowledge-based Systems, Rule-based systems, Forward and Backward Chaining, Frame-based systems. Architecture of Expert System, Agents and Environment, Forward & Backward chaining, Resolution, Probabilistic reasoning, Utility theory, Hidden Markov Models (HMM), Bayesian Networks.

| Module 5 | Planning & Uncertainty | 8 hours |
|---|---|---|

Planning with state Space Search, Conditional Planning, Continuous planning, Multi-Agent Planning, Forms of Learning, inductive learning, Reinforcement Learning, learning decision trees, Neural Net learning, and Genetic learning. Probabilistic Methods, Bayesian Theory, Dempster-Shafer Theory, Bayes Network, Evolutionary computations: Swarm Intelligence, ant colony optimization, Agents, Intelligent Agents, Structure of Intelligent Agents, Virtual Agents, Multi-agent systems.
Case Study: Health Care, E Commerce, Smart Cities.

| | | |
|---|---|---|
| **Total Lecture Hours** | | **40 hours** |
| **Textbook:** | | |
| **1.** | Artificial Intelligence – A Modern Approach, Pearson Education. Fourth Edition 2021 | "Stuart Russell and Peter Norvig", |
| **2.** | Artificial Intelligence, McGraw-Hill Third Edition 2010 | "Elaine Rich and Kevin Knight" |
| **Reference Books:** | | |
| **1.** | Artificial Intelligence, Pearson Education. Inc, Third Edition, 2015 | Patrick Henry Winston |
| **2.** | Artificial Intelligence - A New Synthesis, Harcourt Asia Pvt. Ltd, 1998 | Nils J.Nilsson, |
| NPTEL/ Youtube/ Faculty Video Link: | | |
| **Module 1** | https://nptel.ac.in/courses/106/106/106106198/ | |
| **Module 2** | https://nptel.ac.in/courses/111/107/111107137/ | |
| **Module 3** | https://nptel.ac.in/courses/106/106/106106202/ | |
| **Module 4** | https://nptel.ac.in/courses/106/106/106106213/ | |
| **Module 5** | https://nptel.ac.in/courses/106/105/106105152/ | |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **Course Code:** BBCA0351 | **Course Name:** Object Oriented Programming using Java | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **6** | **3** |

**Pre-requisite:** Basic understanding of programming concepts, along with familiarity with algorithms, and an introductory knowledge of computer systems and software development tools.

**Course Objectives:** To equip with the skills to design and applying object-oriented techniques to solve real-world problems efficiently using Java.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Apply the fundamental concepts of Java programming | **K3** |
| **CO2** | Implement advanced OOP concepts | **K3** |
| **CO3** | Apply abstraction techniques and string operations | **K3** |
| **CO4** | Develop robust Java applications by implementing exception handling, file input/output operations, and multithreading techniques | **K4** |
| **CO5** | Apply Java's Collections Framework and implement generics to work with data structures | **K3** |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 3 | 1 | 1 | 1 | 2 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 1 | 1 | 2 |
| CO3 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 |
| CO4 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 |
| CO5 | 3 | 2 | 3 | 3 | 2 | 2 | 1 | 3 |

**Course Contents / Syllabus**

| **Module 1** | **Basics of Java Programming & OOP concepts** | **6 hours** |
|---|---|---|

History of Java, Features of Java, JVM architecture and its components, Java Program structure: basic syntax, data types, variables and constants, operators in Java.
Decision Making, Looping and Branching, Arrays, Command Line Argument, Console Input/Output.
OOP Concepts in Java (Encapsulation, Polymorphism, Inheritance & Abstraction), Characteristics of OOP, Key Concepts: Classes, Objects, Methods, and Attributes. Defining Class: class Declaration, Instance Variables, Methods, Creating Objects from Classes, Instance vs. Static Variables, Instance vs. static Methods, Getter and Setter Methods.

| **Module 2** | **Polymorphism, Constructors and Inheritance** | **6 hours** |
|---|---|---|

Polymorphism Types (Compile-Time & Run-Time), Defining Methods, Method Signature, Method Overloading, Return Types and Parameters, Variable Scope (Local, Instance, and Class Variables).
Default Constructor, Parameterized Constructors, Constructor Overloading, Constructor Chaining.
Introduction and Types of Inheritance in Java, Access Modifiers (public, private, protected, default), Method Overriding, Constructor Overriding, Use of super and this Keywords. final variable, final method & final class, default method, Interface and it's uses.

| **Module 3** | **Abstraction Packages & Strings** | **6 hours** |
|---|---|---|

Abstract Classes and Methods, Concrete Classes vs. Abstract Classes, Abstract Classes vs. Interfaces.
Introduction to Lambda function and Working with Lambda Variables.
Introduction to packages and Types, Access Protection in Packages, Import and Execution of Packages.
String Introduction, Immutable String, Methods of String class, String Buffer and String Builder class.

| **Module 4** | **Exception & File Handling and Multithreading** | **6 hours** |
|---|---|---|

Exception Handling- Exceptions & its types (Checked and Unchecked), Try-Catch Block, Throwing and Catching Exceptions, Multiple Catch Blocks, Try-Catch-Finally Block, Custom Exception Classes.
Introduction to Multithreading, Thread Life Cycle, Creating Threads: Extending Thread Class and Implementing Runnable Interface, Thread Priorities, Daemon Thread, Synchronization in Threads, Thread Communication (wait, notify, notifyAll).
File Handling-Reading and Writing Files in Java, File Input Stream, File Output Stream, Buffered Reader, Buffered Writer, Byte Stream and Character Stream, Input Stream and Output Stream, Reader and Writer classes

| Module 5 | Collections in Java & Generics | 6 hours |
|---|---|---|
| Introduction to Collections, List, Set, and Map Interfaces, Array List, LinkedList, Iterators in Collections.<br>Introduction to Generic Classes, Creating and Using Generic Classes and Methods. | | |
| | | 30 hours |

**Textbook:**

| S.No | Book Title | Author |
|---|---|---|
| 1. | "Java: The Complete Reference, 7th Edn", McGraw Hill Education, 2017 | Herbert Schildt |
| 2. | "Core Java: An Integrated Approach, New: Includes All Versions upto Java 8", Dreamtech Press, 2016 | R. Nageswara Rao |
| 3. | "Programming with Java 7th Edition", McGraw Hill, 2023 | E. Balagurusamy |

**Reference Books:**

| S.No | Book Title | Author |
|---|---|---|
| 1. | "Schaum's Outline of Programming with Java / 2nd Edition", McGraw Hill, 2020 | Hubbard J. R |
| 2. | "Programming In Java Revised 2Nd Edition" , Oxford University Press, 2018 | Sachin Malhotra Saurabh Choudhary |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://www.youtube.com/watch?v=AEo4KgwKYoU |
| **Module 2** | https://www.youtube.com/watch?v=AEo4KgwKYoU<br>https://www.youtube.com/watch?v=5RkikYKPvpc&t=284s |
| **Module 3** | https://www.youtube.com/watch?v=5RkikYKPvpc&t=284s |
| **Module 4** | https://www.youtube.com/watch?v=bxcZ7cXbDI0&list=PLqleLpAMfxGAEfyXJyF-9UOs9C8dmir<br>https://www.youtube.com/watch?v=jmZfuI3lDK0 |
| **Module 5** | https://www.youtube.com/watch?v=aXZrz8XKQpE<br>https://www.youtube.com/watch?v=hKhlkx_6HeI&list=PLUDwpEzHYYLu9-xrx5ykNH8wmN1C1qClk |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **LAB Course Code:** BBCA0351 | **LAB Course Name: Object Oriented Programming using Java** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **6** | **3** |

**Pre-requisite:** Basic understanding of programming concepts

**Course Objectives:** To explore object-oriented methodology and its methods through collaborative, intriguing experiments.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Apply the fundamental concepts and control structures of Java programming. | **K2** |
| **CO2** | Apply the concepts of object-oriented programming. | **K3** |
| **CO3** | Develop competence with functional interfaces, lambda expressions, and string handling. | **K4** |
| **CO4** | Implement advanced Java features file handling, exception handling multi-threading, and synchronization techniques to handle complex scenarios in Java. | **K5** |
| **CO5** | Implement Java's collection framework into operation | **K5** |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **2** | **3** | **2** | **1** | **1** | **2** |
| **CO2** | **3** | **3** | **3** | **3** | **2** | **1** | **1** | **2** |
| **CO3** | **3** | **2** | **2** | **3** | **2** | **1** | **1** | **2** |
| **CO4** | **3** | **3** | **3** | **3** | **2** | **2** | **2** | **3** |
| **CO5** | **3** | **2** | **3** | **3** | **3** | **2** | **2** | **3** |

**List Of Practical's**

1. Write a program that:
   - Finds the area of a circle given its radius.
   - Demonstrates type casting from float to int.
   - Defines a constant for the value of PI.
2. Write a program that uses the ternary operator to check if a number is positive or negative.
3. Write a program to swap two numbers using bitwise operators.
4. Write a program that checks if a year is a leap year or not.
5. Write a program to find the largest of three numbers using nested if.
6. Write a program to determine if a triangle is an equilateral, isosceles, or scalene based on its sides using a ladder if-else statement.
7. Write a program to identify the season (Winter, Spring, Summer, Fall) based on the month number (1-12) using switch statement.
8. Write a program to calculate the factorial of a number using a for loop.
9. Write a program to print the Fibonacci series up to a specified number of terms using a while loop.
10. Write a program to calculate the sum of digits of given numbers using do-while loop.
11. Write a program to check whether a given number is prime or not.
12. Write a program to find the maximum element in a given array.
13. Write a program to search for a given element in an array and print its index.
14. Write a program to sort an array using the bubble sort algorithm.
15. Write a program to multiply two matrices.
16. Write a program that prints all the odd numbers between 1 and N using the continue statement.
17. Write a program that finds and prints the first prime number less than a given number using a break statement.
18. Write a program to define a class Student with instance variables name, age, and grade. Create an object and provide a method to display the value of class attributes.

19. Write a program that shows the difference between instance and static methods.
20. Write a program to demonstrate the use of getter and setter methods in a class.
21. Write a program that defines a method with a return type and parameters, that calculate the area and perimeter of a rectangle.
22. Write a program that demonstrates the scope of instance variables. Create a class with an instance variable name. Write a method to change this name and another method to display it.
23. Create a class with a static variable counter and increment it each time an object is created. Print the counter value after each creation.
24. Write a program that demonstrates the usage of varargs( Variable Length Arguments). Create a method that takes a variable number of integers and returns their sum.
25. Write a program that demonstrates method chaining. Define multiple methods in a class that return the current object, allowing methods to be called in a single statement.
26. Write a program that demonstrates method overloading by creating multiple methods to calculate the area of different shapes (circle, rectangle, etc).
27. Write a program to demonstrate method overloading in a banking system. The system should have two methods: one that accepts an account number and an amount to deposit, and another that accepts only an amount and uses a default account number.
28. Write a program that uses a default constructor to initialize the instance variables of a class. The default constructor should assign default values to the instance variables, and then print those values in the main method
29. Write a program to create a Product class with a parameterized constructor. The constructor should accept the product's name, price, and quantity, and then display the product details and calculate the total cost.
30. Write a program that demonstrates constructor overloading with default and parameterized values. Class Book has one constructor that sets default values and another constructor that accepts values from the user.
31. Write a program that demonstrates constructor overloading for initializing a Date object. One constructor should initialize the day, month, and year, while another should initialize only the day and month with the current year.
32. Write a program that demonstrates constructor chaining with multiple constructors. Class Vehicle has two constructors: one default constructor and one parameterized constructor.
33. Create a class Employee and subclass Manager to demonstrate inheritance and method overriding.
34. Create a Person class and demonstrate access modifiers.
35. Create an abstract Shape class and override area() method in Circle and Rectangle.
36. Create Person and Student classes demonstrating constructor overriding.
37. Create Book and EBook classes demonstrating super and this usage.
38. Create a Car class with a final variable, final method, and final class.
39. Create an interface Vehicle with a default method fuelEfficiency(). Implement this interface in two classes, Car and Truck, and override the fuelEfficiency() method for both classes to demonstrate default methods in interface.
40. Create two interfaces Flyable and Swimmable, both having default methods fly() and swim(). Create a class FlyingFish that implements both interfaces.
41. Create an abstract class Vehicle with an abstract method start() and a concrete method stop(). Then, create two subclasses: Car and Bike that implement the start() method and inherit the stop() method. Demonstrate the use of these classes in the main() method.
42. Create an abstract class Shape with an abstract method draw(). Then, create a concrete class Circle that implements the draw() method. Also, create another class Square that extends Shape and implements the draw() method.
43. Create an interface Animal with an abstract method makeSound() and a default method eat(). Then, create a class Dog that implements the interface and overrides the makeSound() method.

44. Create two interfaces: LandVehicle and WaterVehicle. The LandVehicle interface has a method drive(), and the WaterVehicle interface has a method sail(). Create a class AmphibiousVehicle that implements both interfaces and provides implementations for both drive() and sail().
45. Create an abstract class Computer with an abstract method process() and a concrete method turnOn(). Also, create an interface Operable with a method operate(). Then, create a class Laptop that implements the Operable interface and extends the Computer class, providing implementations for both process() and operate().
46. Create an abstract class Employee with a constructor that takes the employee name and salary. Create two subclasses: Manager and Developer that inherit from Employee and provide their own implementation of a method work().
47. Create an interface Calculator with a static method add(int a, int b) that returns the sum. Then, create a class MathOperations that calls this static method to perform addition.
48. Create an interface NotificationLogger with default methods logNotification() and logWarning(). Implement the interface in two classes: EmailNotificationLogger and SMSNotificationLogger. Both classes should have their own implementations of logNotification() and logWarning().
49. Create a package called mathoperations with a class Calculator that has methods for addition, subtraction, multiplication, and division. In a separate class TestCalculator in the package app, import the Calculator class and demonstrate the use of these methods by performing basic operations.
50. Create a class Employee with private fields name, id, and salary in the package company. Provide getter and setter methods for these fields. In another class EmployeeTest, show how access protection works by trying to access these fields and methods from outside the package.
51. Create a program that demonstrates the use of a lambda expression to print the square of a given integer.
52. Create a program that uses a lambda expression to compare two strings and determine if the first string is longer than the second.
53. Create a program that demonstrates the use of a lambda expression with multiple statements inside the body. The lambda expression should calculate the product of two integers and return the result.
54. Create a program that demonstrates a lambda expression to find the maximum of two numbers using ternary operator.
55. Create a program that demonstrates the use of a lambda expression to print each element in an array of integers.
56. Create a package bank with classes Account and Transaction. The Account class should have methods to deposit and withdraw money, and the Transaction class should log each transaction. In a Main class, demonstrate the use of these classes by performing deposit and withdrawal actions and logging the transactions.
57. Create a program that demonstrates the use of various methods in the String class such as length(), charAt(), substring(), toUpperCase(), and replace().
58. Create a program that demonstrates the usage of StringBuffer for string manipulation. Perform operations such as append(), insert(), replace(), delete(), and reverse().
59. Create a program that demonstrates the performance difference between StringBuffer and StringBuilder in terms of string concatenation. Perform 1,000,000 append operations using both classes and measure the time taken for each.
60. Create a program that accepts a sentence as input and reverses each word in the sentence using StringBuilder.
61. Create a program that demonstrates the occurrence and handling of an ArithmeticException when trying to divide by zero.
62. Create a program that handles an ArrayIndexOutOfBoundsException when trying to access an index outside the bounds of an array.
63. Create a custom exception called InvalidAgeException. The program should throw this exception if an invalid age (less than or equal to zero) is provided.

64. Create a program that demonstrates the use of multiple catch blocks to handle different exceptions, such as ArithmeticException and ArrayIndexOutOfBoundsException.
65. Create a program that demonstrates the use of the finally block in a try-catch-finally structure, ensuring that a message is printed regardless of whether an exception occurs or not.
66. Create a program that defines a custom exception class InvalidBalanceException. The program should throw this exception if a user attempts to withdraw more money than the balance in a bank account.
67. Create a program that demonstrates the use of nested try-catch blocks to handle multiple exceptions at different levels.
68. Create a program that demonstrates the use of multi-catch to handle multiple exceptions in one catch block.
69. Write a program to create a thread by extending the Thread class and demonstrate its functionality.
70. Create a thread by implementing the Runnable interface, and demonstrate how to start the thread using the Thread class.
71. Create a program that demonstrates how to assign thread priorities using the setPriority() method.
72. Create a program that demonstrates a Daemon Thread and how it behaves when the main thread completes.
73. Write a program to demonstrate synchronization in threads to avoid race conditions.
74. Create a program to demonstrate thread communication using wait(), notify(), and notifyAll().
75. Write a program that uses FileInputStream to read the contents of a binary file and FileOutputStream to write the contents to another binary file.
76. Write a program that uses BufferedReader to read from a text file and BufferedWriter to write the content to another text file.
77. Write a program that reads all lines from a source text file using BufferedReader and writes those lines to another text file using BufferedWriter.
78. Write a program that reads a file and counts the total number of characters in the file using FileReader.
79. Create a program that uses FileReader to read from a text file and FileWriter to write to another text file.
80. Write a program that copies a binary file (like an image) from one location to another using FileInputStream and FileOutputStream.
81. Create a program that demonstrates the use of ArrayList. Perform operations like adding, removing, and accessing elements.
82. Create a program that demonstrates the use of LinkedList. Perform operations like adding, removing, and accessing elements.
83. Create a program that demonstrates the use of HashSet. Perform operations like adding, removing, and checking for duplicates.
84. Create a program that demonstrates the use of HashMap. Perform operations like adding key-value pairs, accessing values, and removing entries.
85. Write a program to demonstrate the use of Iterator for traversing a List
86. Write a program to demonstrate the use of Iterator for traversing a Set.
87. Write a program that demonstrates the use of an Iterator to iterate through a Map's entry set.
88. Create a program that demonstrates the use of the Stack class. Perform operations like pushing, popping, and checking if the stack is empty.
89. Create a program that demonstrates the use of a queue implemented with LinkedList. Perform operations like enqueue, dequeue, and checking if the queue is empty.
90. Create a program that checks whether a string containing parentheses is balanced using a stack. The string contains only characters '(', ')', '{', '}', '[', and ']'.
91. Create a generic class called Box that can store any type of object. Demonstrate the usage of the generic class by storing different types of objects (e.g., Integer, String) in different Box instances.

| | |
|---|---|
| 92. | Write a generic method printArray that prints the elements of any array. The method should work for arrays of different types (e.g., Integer[], String[], Double[]). |
| 93. | Create a generic class Maximum that finds the maximum of three values. The class should only accept types that extend Comparable so that they can be compared to each other. |
| 94. | Create a generic class Pair that holds two objects of different types. Implement a method getFirst() to return the first element and getSecond() to return the second element. |
| 95. | Create a generic Pair class that can hold two objects. Implement a swap method to swap the values of the two objects in the pair. |
| 96. | Create a generic class ItemCounter that counts the occurrences of an item in an array. The class should have a method countOccurrences that returns the number of occurrences of a specified item in the array. |
| 97. | Create an ArrayList of integers. Sort the list in ascending order and descending order, and display the results. |
| 98. | Create an ArrayList of strings. Add several strings and perform operations such as finding the length of each string, removing a string, and checking if a string exists in the list. |
| 99. | Create an ArrayList of integers and write a program to check if a specific element exists in the list using the contains() method. |
| 100. | Create an ArrayList of strings and write a program to update an element at a specific index using the set() method. |
| | **Total Hours: 42 hrs.** |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **Course Code:** BBCA0352 | **Course Name: Personality Development and Professional Skills** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **4** | **2** |

**Pre-requisite:** Basic understanding and foundational knowledge of general communication skills.

**Course Objectives:** The primary objective of this course is to equip students with the essential personal and professional skills required to excel in the modern workplace.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO 1** | Develop self-awareness, set personal goals, and manage time and stress effectively | **K2** |
| **CO2** | Communicate effectively, work well in teams, and practice professional etiquette in various settings. | **K4** |
| **CO3** | Enhance quantitative, logical, and verbal reasoning skills for effective problem-solving and decision-making | **K4** |
| **CO4** | Create impactful resumes, perform confidently in interviews and group discussions, and develop critical soft skills | **K6** |
| **CO5** | Apply project management principles, understand financial literacy, and demonstrate ethical behavior and digital professionalism | **K3** |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 2 | 2 | 1 | 3 | 2 | 2 | 3 |
| CO2 | 1 | 1 | 1 | 1 | 3 | 1 | 2 | 2 |
| CO3 | 2 | 3 | 2 | 1 | 2 | 1 | 1 | 2 |
| CO4 | 1 | 2 | 2 | 1 | 3 | 1 | 2 | 2 |
| CO5 | 1 | 2 | 3 | 1 | 2 | 3 | 3 | 2 |

**Course Contents / Syllabus**

| **Module 1** | **Foundations of Personal Development** | **8 hours** |
|---|---|---|

**Self-Awareness and Self-Improvement**, Self-Assessment Tools: Myers-Briggs Type Indicator (MBTI), StrengthsFinder. **Goal Setting**: SMART Goals, Personal Development Plans. **Time Management**: Prioritization, Scheduling, Avoiding Procrastination. **Stress Management**: Techniques for Managing Stress, Mindfulness, and Relaxation Exercises. **Communication Skills**: Verbal Communication: Public Speaking, Group Discussions, Debating. Non-Verbal Communication: Body Language, Eye Contact, Gestures. **Listening Skills**: Active Listening, Feedback Techniques. **Presentation Skills**: Creating Effective Presentations, Using Visual Aids, Storytelling

| **Module 2** | **Interpersonal and Professional Skills** | **8 hours** |
|---|---|---|

**Interpersonal Skills, Teamwork**: Role of a Team Player, Group Dynamics, Conflict Resolution, **Leadership Skills**: Leadership Styles, Motivating Team Members, Decision Making. **Networking Skills**: Building Professional Relationships, Networking Strategies, Use of Social Media, **Professional Etiquette**, **Corporate Etiquette**: Professional, Behavior, Office Etiquette, Business Meetings. **Email Etiquette**: Professional Email Writing, Common Mistakes to Avoid. **Telephone Etiquette**: Handling Professional Calls, Voicemail Etiquette. **Dining Etiquette**: Business Dining Rules, Table Manners.

| **Module 3** | **Aptitude & logical Reasoning** | **8 hours** |
|---|---|---|

**Aptitude Skills**, **Quantitative Aptitude**: Basic Mathematics, Data Interpretation. **Logical Reasoning**: Analytical Puzzles, Logical Deductions. **Verbal Ability**: Grammar, Vocabulary, Reading Comprehension

| **Module 4** | **Career Readiness and Interview Preparation** | **8 hours** |
|---|---|---|

**Interview Preparation**, Resume Writing: Crafting an Effective Resume, Cover Letter Writing. **Mock Interviews**: HR Round, Technical Round, Stress Interviews. Group Discussions: Techniques to Excel, Common Topics, Role of a Moderator, **Personal Interview Tips**: Dressing for Success, Answering Common Questions, Handling Unexpected Questions, Soft Skills Development, Creativity and Innovation: Brainstorming Techniques, Creative Problem Solving. **Emotional Intelligence**: Understanding Emotions, Empathy, Handling Relationships. **Adaptability and Flexibility**: Coping with Change, Learning Agility. **Critical Thinking**: Evaluating Information, Problem-Solving Strategies

| **Module 5** | **Practical Workplace skills & Ethics** | **8 hours** |
|---|---|---|

**Digital Literacy and Online Presence**, **Professional Use of Social Media**: LinkedIn Profile Optimization, Building an Online Portfolio. **Cyber Etiquette**: Safe Online Practices, Digital Footprint Management. **Blogging and Content Creation**: Writing for the

Web, Creating Engaging Content, **Workplace Skills**, **Project Management**: Basics of Project Management, Tools like MS Project, Agile Methodology. **Time and Task Management Tools**: Using Tools like Trello, Asana, and Calendar Apps. **Financial Literacy**: Basic Financial Planning, Understanding Salaries, Taxes, **Ethics and Values**, **Workplace Ethics**: Integrity, Accountability, Professional Conduct. **Diversity and Inclusion**: Understanding Diversity, Promoting Inclusivity, **Corporate Social Responsibility (CSR)**: Understanding CSR, Participating in CSR Activities

| | |
|---|---|
| **Total Lecture Hours** | **40 hours** |

**Textbook:**

| S.No | Book Title | Author |
|---|---|---|
| 1 | "The 7 Habits of Highly Effective People" | Stephen R. Covey, |
| 2 | "A Modern Approach to Verbal & Non-Verbal Reasoning" | Dr. R.S. Aggarwal |

**Reference Books:**

| S.No | Book Title | Author |
|---|---|---|
| | How to Win Friends & Influence People | Dale Carnegie |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://youtu.be/OWYU-zNKdh0 |
| **Module 2** | https://youtu.be/Ib09GqWP5rY |
| **Module 3** | https://youtu.be/aetE4lR0PQ0 |
| **Module 4** | https://youtu.be/kGwkyjKC2fs |
| **Module 5** | https://youtu.be/vsv0rOVDsrE |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **LAB Course Code:** BBCA0353 | **LAB Course Name: Operating System Lab** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **4** | **2** |

**Pre-requisite:** Basic knowledge of Operating System, Familiarity with system software and command-line interfaces.

**Course Objectives:** This course aims to provide foundational knowledge of operating systems, their types, evolution, and functionalities. It equips students with practical skills in using command-line and graphical user interfaces across DOS, Windows, and Unix/Linux platforms.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Demonstrate fundamental Windows and DOS operations including OS installation, , task management, batch file creation, and system tools usage. | K2 |
| **CO2** | Analyze different user interfaces and computing environments | K4 |
| **CO3** | Implement process management techniques and scheduling algorithms | K3 |
| **CO4** | Apply memory management schemes and page replacement algorithms | K3 |
| **CO5** | Evaluate file system structures and operations | K5 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **1** | **2** | **1** | **1** | **1** | **2** |
| **CO2** | **3** | **3** | **2** | **3** | **2** | **1** | **2** | **2** |
| **CO3** | **3** | **3** | **3** | **3** | **2** | **2** | **2** | **2** |
| **CO4** | **3** | **3** | **3** | **3** | **2** | **2** | **2** | **2** |
| **CO5** | **3** | **3** | **3** | **3** | **2** | **2** | **2** | **2** |

**List of Practical's**

1. Operating System Installation
2. Implementation of Basic DOS Commands.
3. Implementation of Basic Linux Commands.
4. Implementation of Directory Management Commands and Grant Permission to users. – C01
5. Management of User Accounts.
6. Check OS version and system configuration using DOS command
7. Explore Task Manager and explain its components
8. Implementations of fork() system Call.
9. Create and use batch files in DOS
10. View system drivers and services via Windows tools
11. Use msconfig to modify boot settings
12. Change display settings and resolution in Windows
13. Customize the desktop and taskbar environment
14. Navigate Windows Explorer to manage files and folders
15. Create desktop shortcuts and personalize start menu
16. Configure control panel settings like date/time, language
17. se Windows search and Cortana features
18. List running processes using Task Manager
19. Terminate or prioritize processes using Task Manager
20. Use command 'tasklist' to view running processes
21. Use 'taskkill' command to end a process
22. Create a scheduled task in Task Scheduler
23. Implement of FCFS Scheduling Algorithms.
24. Implement of SJF Scheduling Algorithms.
25. Implement of Round-Robin Scheduling Algorithms.

| |
|---|
| 26.Explore background processes and their properties |
| 27.Check memory usage using Task Manager |
| 28.Implementation of Page Replacement Algorithm. |
| 29.File Operations - Organization and Search |
| 30.Display directory structure with /F using TREE /F. |
| 31.Navigate and manipulate folders using CD, RD, DIR commands. |
| 32.Implement of Round-Robin Scheduling Algorithms. |
| 33.Explore background processes and their properties |
| **Total Hours: 48 hrs.** |

**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY**

**GREATER NOIDA-201306**

**(An Autonomous Institute)**

**School of Computer Applications**

| **LAB Course Code:** BBCA0354 | **LAB Course Name: Workplace Communication Lab III** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **4** | **2** |

**Pre-requisite: The students should have completed Workplace Communication course in semester II**

**Course Objectives:**

- Develop strong language skills for effective communication in professional settings.
- Learn to adapt communication styles for diverse workplace scenarios and audiences.
- Develop crucial skills like teamwork, leadership, and problem-solving to boost career prospects.

**Course Outcome:** After completion of the course, the students will be able to

1. Remember the key features of building professional relationships and facing Interviews.
2. Comprehend complex conversations and formal texts.
3. Navigate cultural differences in communication.
4. Scrutinize and select appropriate verbal and non-verbal signals in professional interactions.
5. Write audience-sensitive professional documents with clarity and precision.

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 2 |
| CO2 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| CO3 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| CO4 | 1 | 2 | 1 | 1 | 3 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |

**List Of Practical**

1. **Introduction**
   - To the course · Exam Pattern · Anubhav Activity on score improvement
2. **Listening to Conversations**
   - The students will develop their listening ability to comprehend English conversations, understanding and responding to it effectively.
3. **Vocabulary Building**
   - The students will enhance their vocabulary through various exercises and word-games.
4. **Role Play: Everyday Scenarios**
   - The students will practice conversations, greetings, and introductions.
5. **Recognizing and Pronouncing words accurately**
   - To recognize and pronounce words with similar sounds accurately and understand their meanings in different contexts
   - Improve their overall pronunciation and comprehension
6. **Summarizing Texts**
   - The students will develop the ability to summarize texts.
7. **Group Discussions**
   - The students will improve their ability to participate in group discussions.
8. **Basic Presentation Skills**
   - The students will learn to design and deliver simple presentations.

| |
|---|
| 9. **Reading Comprehension**<br>• The students will improve their comprehension of written texts. |
| 10. **Verbal Ability**<br>• Sentence Completion · The students will practice completing sentences |
| 11. **Paragraph jumbled sentences**<br>• Rearranging sentences to form a coherent paragraph |
| 12. **Professional Email Writing**<br>• The students will practice writing professional emails within a time period. |
| 13. **Describing Pictures**<br>• The students will respond to picture prompts. |
| 14. **Story Writing and Narrating**<br>• The students will practice writing short stories from their own experience and narrate it. |
| 15. **Cross-Cultural Communication**<br>• Understand challenges and opportunities of communicating across cultures |
| 16. **Nonverbal Communication**<br>• Demonstrate the importance of nonverbal cues in various situational communication |
| 17. **Interview Preparation: FAQs**<br>• Learn to answer frequently asked interview questions confidently and effectively |
| 18. **Gender Stereotypes and Communication**<br>• Recognize and address gender biases in communication |
| 19. **Networking and Building Relationships**<br>• Develop skills to build professional relationships and network effectively |
| 20. **Miscommunication Reflection**<br>• Students reflect on instances of miscommunication. They learn to avoid miscommunication. |
| 21. **Intercultural Sensitivity and Awareness**<br>• Develop understanding of cultural differences and nuances |
| 22. **Empathetic Listening Scenarios**<br>• Students will pair up in role play scenarios requiring empathetic responses. They will practice not only active listening but emotional intelligence in responses. |
| 23. **Peer Feedback**<br>• The students will learn to provide and receive constructive feedback. |
| 24. **Self-Reflection**<br>• The students will reflect on their learning experiences. |
| **Total Hours: 48 hrs.** |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **LAB Course Code:** BBCA0316 | **LAB Course Name: Artificial Intelligence Lab** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **4** | **2** |

**Pre-requisite:** Knowledge of Python

**Course Objectives:** Introductory knowledge of the historical perspective of AI and its foundations, and familiarity with principles of AI toward problem solving, inference, perception, knowledge representation, and learning. Acquiring knowledge of various forms of learning and computational statistics.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Apply searching problems using various algorithms. Explain functionality of Chat-bot. | **K3** |
| **CO2** | Identify problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem. | **K1** |
| **CO3** | Implement the program to POS (Parts of Speech) tagging for the give sentence using NLTK. | **K3** |
| **CO4** | Design and carry out an empirical evaluation of different algorithms on a problem formalization and state the conclusions that the evaluation supports. | **K3** |
| **CO5** | Implement basic AI algorithms (e.g., standard search algorithms or dynamic programming). | **K3** |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **2** | **3** | **1** | **-** | **1** | **2** |
| **CO2** | **3** | **3** | **2** | **2** | **2** | **-** | **1** | **2** |
| **CO3** | **3** | **2** | **2** | **3** | **1** | **-** | **-** | **2** |
| **CO4** | **3** | **3** | **3** | **3** | **2** | **1** | **1** | **3** |
| **CO5** | **3** | **2** | **3** | **3** | **1** | **-** | **1** | **2** |

**List Of Practical's**

1. Write a python program to implement simple Chat-bot
2. Implement Tic-Tac-Toe using A* algorithm.
3. Implement alpha-beta pruning graphically with proper example and justify the pruning.
4. Write a python program to implement Water Jug Problem.
5. Use Heuristic Search Techniques to Implement Best first search (Best-Solution but not always optimal) and A* algorithm (Always gives optimal solution).
6. Write a program to implement Hangman game using python.
7. Write a program to solve the Monkey Banana problem
8. Write a python program to implement Simple Calculator program.
9. Write a python program to POS (Parts of Speech) tagging for the give sentence using NLTK
10. Solve 8-puzzle problem using best first search
11. Solve Robot (traversal) problem using means End Analysis.
12. Implementation of Image features Processing using OPENCV AND OPEN VINO
13. Write a program to implement Naïve Bayes Algorithm
14. Use Heuristic Search Techniques to Implement Hill-Climbing Algorithm
15. Write a Program to implement alpha-beta Pruning.

**Total Hours: 40 hrs.**

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **LAB Course Code:** BBCA0315 | **LAB Course Name: Canva & Corel Draw Lab** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **4** | **2** |

**Pre-requisite:** Basic computer skills, internet access, and a creative mindset**.**

**Course Objectives:** The lab aims to develop proficiency in graphic design, branding, and digital content creation using Canva and CorelDRAW, focusing on creative design, vector graphics, marketing materials, and professional portfolio development for industry readiness.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Learn design concepts, color theory, typography, and layout principles. | K2 |
| **CO2** | Use Canva tools for creating social media posts, presentations, and animations. | K3 |
| **CO3** | Create and manipulate vector graphics, logos, and layouts using CorelDRAW. | K4 |
| **CO4** | Develop high-quality branding and marketing materials using advanced design techniques. | K5 |
| **CO5** | Design a complete portfolio showcasing real-world projects for career advancement. | K6 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **1** | **2** | **-** | **-** | **-** | **2** |
| **CO2** | **3** | **2** | **2** | **3** | **2** | **-** | **-** | **3** |
| **CO3** | **3** | **3** | **3** | **3** | **2** | **-** | **-** | **3** |
| **CO4** | **3** | **3** | **3** | **3** | **2** | **-** | **-** | **3** |
| **CO5** | **3** | **2** | **3** | **3** | **3** | **-** | **-** | **3** |

**List Of Practical's**

1. **Exploring Canva & Basic Graphic Design** – Discuss Canva's interface, tools, and basic design principles
2. **Designing a Social Media Post** – Create a social media post for Instagram or Facebook using Canva.
3. **Poster Design for Event Promotion** – Create an attractive event poster using Canva's templates and elements
4. **Infographic Design for Data Visualization** – Design an infographic using Canva's charts and icons.
5. **UI/UX Wireframe Design in Canva** – Create a low-fidelity UI wireframe for a website or mobile app.
6. **Exploring CorelDRAW & Basic Vector Drawing –** Learn CorelDRAW's interface and create simple vector illustrations.
7. **Logo Design in CorelDRAW** – Create a professional logo using vector tools and typography.
8. **Business Card Design in CorelDRAW** – Design a business card with branding elements and text effects.
9. **Brochure Design (Tri-fold or Bi-fold) –** Create a well-structured brochure for marketing purposes.
10. **Banner Design for Digital & Print Media** – Design a marketing banner for both online and print use.
11. **Product Packaging Label Design** – Design a packaging label with branding, typography, and color themes.
12. **Certificate & Invitation Card Design** – Create an official certificate or invitation card using CorelDRAW.
13. **Animated Video Creation in Canva** – Create an animated video using Canva's timeline and animation tools.
14. **Digital Portfolio Design Using Canva & CorelDRAW** – Create a digital portfolio showcasing completed projects.
15. **Final Project: Branding Kit (Logo, Business Card, Brochure, Social Media Posts)** – Apply all learned skills to design a complete branding package.

**Total Hours: 48 hrs.**

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **LAB Course Code:** BBCA0314 | **LAB Course Name: CRM Fundamentals Lab** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **4** | **2** |

**Pre-requisite:** Basic knowledge of Computer and Programming Language.

**Course Objectives:**

The objective of this course is to develop a comprehensive understanding of CRM fundamentals, including lifecycle management, stakeholder mapping, and strategy development. It covers CLV calculation, data collection, and planning using various CRM platforms. The course also focuses on Salesforce proficiency, including login, account management, profile creation, and field-level security configuration.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describe the CRM lifecycle and stakeholder mapping to enhance customer relationships. | K2 |
| **CO2** | Apply CRM strategies, including CLV calculation and employee-customer relationship factors | K2 |
| **CO3** | Demonstrate CRM data collection, planning, and various platforms to achieve desired business outcomes | K3 |
| **CO4** | Demonstrate proficiency in Salesforce for login, account, and contact management. | K3 |
| **CO5** | Demonstrate skills in creating profiles and configuring field-level security in Salesforce. | K3 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **2** | **3** | **2** | **2** | **2** | **2** | **1** | **2** |
| **CO2** | **2** | **3** | **3** | **2** | **2** | **3** | **1** | **2** |
| **CO3** | **2** | **3** | **3** | **3** | **2** | **3** | **1** | **3** |
| **CO4** | **2** | **2** | **3** | **3** | **1** | **2** | **1** | **3** |
| **CO5** | **2** | **2** | **3** | **3** | **1** | **2** | **3** | **3** |

**List Of Practical's**

1. CRM Life Cycle Analysis.
2. Stakeholder Mapping in CRM.
3. Customer Lifetime Value (CLV) Calculation
4. Factors Affecting Employee-Customer Relationship.
5. CRM Strategy Development.
6. CRM Data Collection and Analysis.
7. CRM Planning with Desired Outputs.
8. Introduction to Various CRM Platform.
9. Write a Steps to Log in to Trailhead.
10. Write the steps to create an account named 'Josh' on the Account object.
11. Write the steps to create an contact named 'Alexjander' on the Contact object.
12. Write the steps to create a new profile on trailhead account.
13. Write a step Configuring Field-Level Security in Salesforce

**Total Hours: 40 hrs.**

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **Course Code:** BBCA0402 | **Course Name: Database Management System** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **3** | **1** | **0** | **4** |

**Pre-requisite:** Basic understanding of computer concepts.

**Course Objectives:** To introduce relational and non-relational databases with emphasis on how to create, organize and retrieve information.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Design ER diagram of database for solving the real-world problems. | K5 |
| **CO2** | Analyze the Structured Query Language (SQL) to solve queries | K3 |
| **CO3** | Describe Relational Data Model and explain the concept of functional dependencies and Normalization. | K2 |
| **CO4** | Analyze transaction and concurrency control in transaction management. | K2 |
| **CO5** | Design and implement relational and non-relational database for the need of the real-world project. | K3 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **2** | **2** | **2** | **1** | **2** | **1** | **1** | **1** |
| **CO2** | **2** | **3** | **3** | **2** | **2** | **2** | **1** | **2** |
| **CO3** | **3** | **3** | **3** | **2** | **3** | **2** | **2** | **2** |
| **CO4** | **2** | **2** | **3** | **3** | **2** | **2** | **2** | **1** |
| **CO5** | **3** | **2** | **3** | **3** | **3** | **2** | **2** | **2** |

**Course Contents / Syllabus**

| **Module 1** | **Introduction of Database & Conceptual Designing** | **8 hours** |
|---|---|---|

Definition of Data, Database, and DBMS, Overview of Database Applications, Advantages and Disadvantages of DBMS, Roles of Database Users and Administrators. Introduction to Data Models, Types of Database Models (Hierarchical, Network, Relational, Object-oriented). Data Models, Schemas, and Instances, Three-schema Architecture and Data Independence. Keys: Primary Key, Candidate Key, Super Key, Foreign Key, Composite Key, Alternate Key, Unique Key, Constraints in a table: Primary Key, Foreign Key, Unique Key, NOT NULL, CHECK, Entity-Relationship (ER) Model, Entities and Entity Sets, Attributes and Relationships, ER Diagrams and Weak Entity Sets.

| **Module 2** | **Relational Data Model & Basic of SQL** | **8 hours** |
|---|---|---|

Domains, attributes, Tuples and Relations. Relational Constraints – Domain constraint, key constraint, primary key constraint, referential integrity constraint. SQL Basics: DDL and DML, Aggregate Functions (Min (), Max(), Sum(), Avg(), Count()), Logical operators (AND, OR NOT), Predicates (Like, Between, Alias, Distinct), Clauses(Group By, Having, Order by, top/limit), Inner Join, Natural Join, Full Outer Join, Left Outer Join, Right outer Join, Equi Join.

| **Module 3** | **Normalization & Database Design** | **8 hours** |
|---|---|---|

Anomalies in a database, Functional Dependencies: Armstrong's Axioms, Definition, Properties (Reflexivity, Augmentation, Transitivity), Types (Trivial, Non-Trivial, Partial and Full Functional Dependency), Closure of Functional Dependencies, Normal Forms (1NF, 2NF, 3NF).

| **Module 4** | **Transaction & Concurrency control** | **8 hours** |
|---|---|---|

ACID Properties, Transactions and Schedules, Concurrent Execution of Transactions, Lock-Based Concurrency Control, Performance of Locking, 2 Phase Locking Protocol, Serializability, and Recoverability, Dealing with Deadlocks.

| **Module 5** | **Introductionof No SQL** | **8 hours** |
|---|---|---|

Introduction to NoSQL, Data Models: Document, Key value, Column family, Graph. Uses and Features of NO/SQL document databases. CAP theorem, BASE vs ACID, CRUD operations.

| **Total Lecture Hours** | **40 hours** |
|---|---|

**Textbook:**

| **S.No** | **Book Title** | **Author** |
|---|---|---|

| | | |
|---|---|---|
| **1** | ” Database System Concepts”, Seventh Edition, McGraw - Hill.(2019) | Korth, Silbertz, Sudarshan |
| **2** | “An Introduction to Database Systems”, Eighth Edition , Pearson,. (2004) | C J Date |
| **3** | “SQL, PL/SQL The programming language of Oracle”, Fourth Edition, BPB Publication. (2010) | Ivan Bayross |
| **4** | “NoSQL with MongoDB in 24 Hours” Sams Publishing; 1st edition (2014) | Brad Dayley |

**Reference Books:**

| **S.No** | **Book Title** | **Author** |
|---|---|---|
| **1** | “Database Systems: A Practical Approach to Design, Implementation and Management”, Third Edition,Pearson Education, (2007) | Thomas Cannolly and Carolyn Begg |
| **2** | “Database Management Systems” Third Edition, McGraw-Hill (2002) | Raghu Ramakrishan and Johannes Gehrke |
| **3** | NoSQL and SQL Data Modeling: Bringing Together Data, Semantics, and Software First Edition (2016) | Ted Hills |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://archive.nptel.ac.in/courses/106/106/106106220/ |
| **Module 2** | https://onlinecourses.nptel.ac.in/noc21_cs04/preview |
| **Module 3** | https://nptel.ac.in/courses/106106093 |
| **Module 4** | https://swayam-uat-node1.appspot.com/proc_9i/preview |
| **Module 5** | https://www.udemy.com/course/sql-to-nosql-database-handson-with-mongodb/ |

**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY**

**GREATER NOIDA-201306**

**(An Autonomous Institute)**

**School of Computer Applications**

| **Course Code:** BBCA0403 | **Course Name: Digital Marketing & SEO** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **3** | **0** | **0** | **3** |

**Pre-requisite:** Students should be able to think creatively.

**Course Objectives:** To acquaint the students with the growing integration between traditional and digital marketing concepts and practices in the digital era.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describe the concept of digital marketing and how it integrates with traditional marketing. | K2 |
| **CO2** | Recognize the marketers use Google SEO projects to influence purchasing and selling decisions on digital platforms using digital content and tools. | K1 |
| **CO3** | Analyze the benefits of integrating traditional and digital marketing with Google SEO for sales and purchasing marketing strategies. | K3 |
| **CO4** | Examine the effectiveness of email, content, and social media marketing strategies in digital media campaigns." | K3 |
| **CO5** | Implement digital marketing strategies to enhance business growth and career opportunities. | K5 |

## CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 1 | 1 | 1 | - | - | 1 |
| CO2 | 2 | 3 | 2 | 3 | - | - | - | 2 |
| CO3 | 2 | 3 | 3 | 2 | 1 | - | - | - |
| CO4 | 2 | 2 | 3 | 3 | 1 | - | 1 | 2 |
| CO5 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 3 |

## Course Contents / Syllabus

| **Module 1** | **Introduction to Digital Marketing** | **8 hours** |
|---|---|---|

The new digital world, trends driving shifts from traditional marketing practices to digital marketing practices, the modern digital consumer, and the new consumer's digital journey. Marketing strategies for the digital world—the latest practices.

| **Module 2** | **Social Content Strategy and Promotion** | **8 hours** |
|---|---|---|

Social Content Strategy: Content Seeding, Social Media Formats, Content Promotion, Content Optimization, Influencer Marketing, Word of Mouth Marketing, Measurement and Tracking, Content Promotion Strategy, Audience Segmentation Facebook Marketing Fundamentals: Introduction to Facebook, The Value to Marketers, Page Management, Facebook Live, Messenger Facebook Ads and Marketing: Facebook Ads, Ads Manager, Strategy Process, Buying Channels and Ad Auctions.

| **Module 3** | **Social Content Strategy and Promotion** | **8 hours** |
|---|---|---|

Social Content Strategy: Content Seeding, Social Media Formats, Content Promotion, Content Optimization, Influencer Marketing, Word of Mouth Marketing, Measurement and Tracking, Content Promotion Strategy, Audience Segmentation Facebook Marketing Fundamentals: Introduction to Facebook, The Value to Marketers, Page Management, Facebook Live, Messenger Facebook Ads and Marketing: Facebook Ads, Ads Manager, Strategy Process, Buying Channels and Ad Auctions

| **Module 4** | **SEO and Current Scenario in Social Media** | **8 hours** |
|---|---|---|

Overview of search engine optimization (SEO), search engine marketing, mobile marketing, video marketing, Understanding the relationship between content and branding and its impact on sales, Online campaign management, Understanding trends in social media marketing – Indian and global context.

| **Module 5** | **SEM and Display Advertising** | **8 hours** |
|---|---|---|

Search Engine Marketing (SEM), Keywords, On-Site SEO: optimize UX & Design, off-Sire SEO: Link-building. programmatic & Display Advertising, Search Engine Marketing with Google Ads (SEM), Keyword Selection, create Taxi Ads, CPC Bidding. Navigate Google Ads, SEM Metrics & optimization, Jobs in SEM, Display Advertising, Display AJs & Targeting, Sales Models, Display Ads in google Ads, video Advertising, Jobs in Display Advertising. Email Marketing. find the module name.

| **Total Lecture:** | | **40 hours** |
|---|---|---|
| **S.No** | **Book Title** | **Author** |
| **1.** | Fundamentals of Digital Marketing (2nd Edition),2019 | Puneet Bhatia |
| **2.** | The Ultimate Guide for Website Owners, BUUKS 1st Edition 2019 | Deepak Bansal |
| **3.** | Digital and Social Media Marketing, Mahi Publisher 1st Edition 2023 | Dr. Shailendra Singh Chauhan, Dr. Pooja Bhatia, Dr. Ved Prakash |

**Reference Books:**

| **S.No** | **Book Title** | **Author** |
|---|---|---|
| **1.** | The art of digital marketing: the definitive guide to creating strategic, targeted, and measurable online campaigns. John Wiley & Sons.(2016). | Dodson, I. |
| **2.** | Marketing 4.0: Moving from traditional to digital. John Wiley & Sons.1st Edition 2016 | Kartajaya, I., Kotler, P., & Setiawan |
| **3.** | Understanding Digital Marketing - Marketing Strategies for Engaging the Digital Generation. Kogan Page Limited, Kogan Page 5th Edition 2020 | Ryan, Damien. |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://www.youtube.com/watch?v=68B3N0x3cPI&list=PLbRMhDVUMnge625uLkVoqfS-uK-KJTBgp&index=1 |
| **Module 2** | https://www.youtube.com/watch?v=3iSKFCKLUsI&list=PLbRMhDVUMnge625uLkVoqfS-uK-KJTBgp&index=2 |
| **Module 3** | https://www.youtube.com/watch?v=67lO4HtJitg&list=PLbRMhDVUMnge625uLkVoqfS-uK-KJTBgp&index=8 |
| **Module 4** | https://www.youtube.com/watch?v=fYSvrZD4G38&list=PLbRMhDVUMnge625uLkVoqfS-uK-KJTBgp&index=14 |
| **Module 5** | https://www.youtube.com/watch?v=GauClv1HsZA&list=PLbRMhDVUMnge625uLkVoqfS- |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **Course Code:** BBCA0404 | **Course Name: Data Science** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **3** | **0** | **0** | **3** |

**Pre-requisite**: Basics of Mathematics and Computer Knowledge

**Course Objectives:** A data science course aims to equip students with the skills to analyse, interpret, and communicate data effectively, enabling them to extract insights and make data-driven decisions across various fields

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describe the process and components of Data Science. | K2 |
| **CO2** | Discuss the importance of probability and statistics in Data Science | K2 |
| **CO3** | Demonstrate knowledge of statistical data analysis techniques utilized in business decision making | K4 |
| **CO4** | Acquire the knowledge of different machine learning techniques. | K3 |
| **CO5** | Analyze the key elements, methods, and success factors of Data Science projects. | K4 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **3** | **3** | **2** | **1** | **1** | **1** | **3** |
| **CO2** | **3** | **2** | **2** | **2** | **1** | **1** | **1** | **3** |
| **CO3** | **3** | **2** | **2** | **2** | **1** | **1** | **1** | **3** |
| **CO4** | **3** | **2** | **2** | **2** | **1** | **1** | **1** | **3** |
| **CO5** | **3** | **2** | **3** | **2** | **1** | **1** | **1** | **3** |

**Course Contents / Syllabus**

| **Module 1** | **Data Science - An Overview** | **8 hours** |
|---|---|---|

**Introduction to Data Science**: Definition and description, history and development, terminologies, basic framework and architecture, difference between Data Science and business analytics, importance of Data Science, primary components of Data Science, users of Data Science and its hierarchy.

**Overview of Data Science techniques:** challenges and opportunities in Data Science, industrial application of Data Science techniques.

| **Module 2** | **Mathematics and Statistics in Data Science** | **8 hours** |
|---|---|---|

**Role of mathematics & statistical measures**: Descriptive, Predictive, and prescriptive statistics, introduction to statistical inference, application of statistical techniques

**Linear algebra:** Matrix and vector theory, role of linear algebra in Data Science, exploratory data analysis and visualization techniques, difference between exploratory and descriptive statistics.

| **Module 3** | **Represent And Transform Data And Data Modelling** | **8 hours** |
|---|---|---|

**Statistics and Representation Techniques:** Understand Data Transformation, Represent and Transform unstructured data, Data Transformation Tools, Decision-centred visualization.

**Fundamentals of Visualization:** Common graphs, Common tools, understand the popular open source data science frameworks. Understand modelling and Machine Learning techniques, Accuracy Precision & recall.

| **Module 4** | **Machine Learning in Data Science** | **8 hours** |
|---|---|---|

**Role of machine learning, different types of machine learning techniques:** Supervised, unsupervised, reinforcement and deep learning, difference between different machine learning techniques, machine learning algorithms, difference between classification and prediction.

**About Machine learning techniques:** Regression to neural networks, Decision tree classifier, Machine learning Framework, Auto insurance Fraud Analyzed in Jupyter Notebooks.

| **Module 5** | **Data Science Project Management** | **8 hours** |
|---|---|---|

**Data Science project framework:** Execution flow of a Data Science project, various components of Data Science projects, stakeholders of Data Science project, industry use cases of Data Science implementation, challenges and scope of Data Science project management, process evaluation model, comparison of Data Science project methods, improvement in success of Data Science project models.

| **Total Lecture Hours** | **40 hours** |
|---|---|

| **Textbook:** | | |
|---|---|---|
| **S.No** | **Book Title** | **Author** |
| **1** | Data Science from Scratch: First Principles with Python, : O'Reilly Media 2nd Edition 2019 | Joel Grus |
| **2** | Principles of Data Science, Packt Publishing 3rd Edition 2023 | Sinan Ozdemir |
| **Reference Books:** | | |
| **S.No** | **Book Title** | **Author** |
| **1** | Data Science For Dummies, Wiley 3rd Edition 2021 | Lillian Pierson |
| **2** | Data Science for Business: What You Need to Know about Data Mining and Data- Analytic Thinking, O'Reilly Media 1st Edition 2013 | Foster Provost, Tom Fawcett |
| **3** | Data Smart: Using Data Science to Transform Information into Insight, Wiley 1st Edition 2013 | John W. Foreman, Matthew Josdal |
| **4** | Introduction to Probability, Chapman & Hall/CRC 2nd Edition 2019 | Joseph K. Blitzstein and Jessica Hwang |
| **5** | Introduction to Machine Learning with Python: A Guide for Data Scientists, O'Reilly Media 1st Edition 2016 | Andreas C. Muller and Sarah Guido |

| NPTEL/ Youtube/ Faculty Video Link: | |
|---|---|
| **Module 1** | https://onlinecourses.nptel.ac.in/noc21_cs69/preview |
| **Module 2** | https://archive.nptel.ac.in/courses/111/105/111105090/ |
| **Module 3** | https://www.youtube.com/watch?v=qdnM8Fpvdqc |
| **Module 4** | https://onlinecourses.nptel.ac.in/noc23_cs18/preview |
| **Module 5** | https://onlinecourses.nptel.ac.in/noc25_mg71/preview |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| Course Code: BBCA0411 | Course Name: CRM Administration | L | T | P | C |
|---|---|---|---|---|---|
| Course Offered in: BCA | | 3 | 0 | 0 | 3 |

**Pre-requisite:** Creative thinking and which is being used by the creative talent in your business areas.

**Course Objectives:** Understand the concepts of Sales force App. Understand the concepts of Lightning Experience. Familiarize with concepts administration. Learn Admin Essentials in Lightning Experience

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describe the basic working environment of Salesforce | K2 |
| **CO2** | Discuss the concepts of Lightning & Salesforce App Experience Customization | K2 |
| **CO3** | Describe the concepts of reports chatter administration | K3 |
| **CO4** | Discuss the concepts of Lightning Experience | K2 |
| **CO5** | Describe Admin Essentials in Lightning Experience | K3 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 1 | 3 | 1 | - | - | 2 |
| **CO2** | 3 | 2 | 2 | 3 | 2 | 1 | - | 2 |
| **CO3** | 2 | 3 | 3 | 3 | 2 | 2 | 1 | 3 |
| **CO4** | 3 | 2 | 2 | 3 | 2 | 1 | 1 | 2 |
| **CO5** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 |

**Course Contents / Syllabus**

| **Module 1** | **Introduction** | **8 hours** |
|---|---|---|

Sales force Platform Basics, User Management, Data Modeling ,Data Management, Identity Basic , Data Security ,Lightning Experience Customization, Lightning APP Builder Sales force Mobile App Customization, User Engagement , Formulas and Validation, Data Security, Pick list Administration.

| **Module 2** | **Lightning & Sales force App Experience Customization** | **8 hours** |
|---|---|---|

Formula and Validation, Accounts and Contacts for Lightning Experience, Lead and Opportunity for Lightning Experience, Product Quotes and Contracts, Campaign Basic.

| **Module 3** | **Sales force Administration** | **8 hours** |
|---|---|---|

Service Cloud for lightning Experience, Sales force mobile app customization, App Exchange basic Duplicate Management Lightning Experience for Sales force Classic Users, Chatter Administration for Lightning Experience, Reports and Dashboards for lightning experience, Lightning experience customization, Lightning experience rollout , Sales force flow, Lightning experience report dashboard Specialist.

| **Module 4** | **Lightning Experience** | **8 hours** |
|---|---|---|

Prepare Sales force Org for Users, Customize an Org to Support a New Business Unit, protect data in Sales force, Customize a Sales Path for team, Customize a Sales force Object, Import and Export with Data Management Tools.

| **Module 5** | **Learn Admin Essentials in Lightning Experience** | **8 hours** |
|---|---|---|

Learn about the custom object and custom field in Salesforce Lightning, uses of Custom Object and Custom field in Lightening, Workflow in Lightning, Update Record Field using Workflow, Send Email alert using Workflow, Data Loader in Salesforce Lightning

| **Total Lecture Hours** | **40 hours** |
|---|---|

**Textbook:**

| S.No | Book Title | Author |
|---|---|---|
| 1 | Digital Marketing for Dummies,Publisher: John Wiley & Sons,Inc | Ryan Deiss& Russ Henneberry |
| 2 | Youtility,, Publisher: Gildan Media, LLC | Jay Baer |
| 3 | Epic Content Marketing, Publication: McGraw Hill Education | Joe Pulizzi |

**Reference Books:**

| S.No | Book Title | Author |
|---|---|---|
| 1 | Salesforce CRM Administration Handbook: A comprehensive guide to administering, configuring, and customizing Salesforce CRM Paperback – 30 April 2024, : Packt Publishing 1st Edition | Krzysztof Nowacki, Mateusz Twarożek |
| 2 | Mastering Salesforce CRM Administration (English, Electronic book text, Gupta Rakesh)ISBN: 9781786463180, 9781786463180, : Packt Publishing 1st Edition,2017 | Rakesh Gupta |
| 3 | Salesforce CRM Admin Cookbook - (English, Electronic book text, Goodey Paul)ISBN: 9781788625517, 9781788625517, : Packt Publishing 2nd edition 2017 | Paul Goodey |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://www.youtube.com/watch?v=bxtqh-fyoTjY&list=PLaGX30v1lh1BaUKgXa05gqrOP0vUg_6i&index=1 |
| **Module 2** | https://www.youtube.com/watch?v=ZkQwm-6lsIw&list=PLaGX30v1lh1BaUKgXa05gqrOP0vUg_6i&index=3 |
| **Module 3** | https://www.youtube.com/watch?v=iWbVm_o9Z0Q&list=PLaGX-30v1lh1BaUKgXa05gqrOP0vUg_6i&index=8 |
| **Module 4** | https://www.youtube.com/watch?v=oG5y-ynaREY&list=PLaGX-30v1lh1BaUKgXa05gqrOP0vUg_6i&index=11 |
| **Module 5** | https://www.youtube.com/watch?v=hKQTJ3L3opg&list=PLaGX-30v1lh1BaUKgXa05gqrOP0vUg_6i&index=12 |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **Course Code:** BBCA0413 | **Course Name: Machine Learning** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **3** | **0** | **0** | **3** |

**Pre-requisite:** Basic Knowledge of Artificial Intelligence

**Course Objectives:** To introduce fundamental concepts in machine learning and popular machine learning algorithms. To understand the standard and most popular supervised learning algorithm.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describing the utilization and implementation of the proper machine learning algorithm. | K2 |
| **CO2** | Discuss the basic supervised machine learning algorithms. | K2 |
| **CO3** | Differentiate between supervised and unsupervised learning. | K4 |
| **CO4** | Discuss algorithmic topics of machine learning and be mathematically deep enough to introduce the require theory. | K2 |
| **CO5** | Apply appreciation for what is involved in learning from data. | K3 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **2** | **3** | **1** | **-** | **1** | **2** |
| **CO2** | **3** | **2** | **2** | **3** | **-** | **-** | **-** | **2** |
| **CO3** | **3** | **2** | **2** | **2** | **-** | **-** | **-** | **2** |
| **CO4** | **3** | **3** | **2** | **3** | **-** | **-** | **-** | **2** |
| **CO5** | **3** | **3** | **3** | **2** | **1** | **1** | **1** | **3** |

**Course Contents / Syllabus**

| **Module 1** | **Introduction to Machine Learning** | **8 hours** |
|---|---|---|

Learning, Types of Learning, well defined learning problems, designing a Learning System, History of ML, Introduction of Machine Learning Approaches, Introduction to Model Building, Sensitivity Analysis, Underfitting and Overfitting, Bias and Variance, Concept Learning Task, Find – S Algorithms, Version Space and Candidate Elimination Algorithm, Inductive Bias, Issues in Machine Learning and Data Science Vs Machine Learning.

| **Module 2** | **Mining Association and Supervised Learning** | **8 hours** |
|---|---|---|

Classification and Regression, Regression: Linear Regression, Multiple Linear Regression, Logistic Regression, Polynomial Regression, Decision Trees: ID3, C4.5, CART.
Apriori Algorithm: Market basket analysis, Association Rules.
Neural Networks: Introduction, Perceptron, Multilayer Perceptron, Support Vector Machine.

| **Module 3** | **Unsupervised Learning** | **8 hours** |
|---|---|---|

Introduction to clustering, K-means clustering, K-Nearest Neighbor, Iterative distance-based clustering, Dealing with continuous, categorical values in K-Means, Hierarchical: AGNES, DIANA, Partitional: K-means clustering, K-Mode Clustering, density-based clustering, Expectation Maximization, Gaussian Mixture Models.

| **Module 4** | **Probabilistic & Ensemble Learning** | **8 hours** |
|---|---|---|

Bayesian Learning, Bayes Optimal Classifier, Naïve Bayes Classifier, Bayesian Belief Networks.
Ensembles methods: Bagging & boosting, C5.0 boosting, Random Forest, Gradient Boosting Machines and XGBoost.

| **Module 5** | **Reinforcement Learning & Case Studies** | **8 hours** |
|---|---|---|

Reinforcement Learning: Introduction to Reinforcement Learning, Learning Task, Example of Reinforcement Learning in Practice, Learning Models for Reinforcement – (Markov Decision Process, Q Learning – Q Learning function, Q-Learning Algorithm), Application of Reinforcement Learning.
Case Study: Health Care, E Commerce, Smart Cities.

| **Total Lecture Hours** | **40 hours** |
|---|---|

**Textbook:**

| | | |
|---|---|---|
| **1.** | Machine Learning: A Constraint-Based Approach, : Morgan Kaufmann 2nd Edition 2023 | Marco Gori |
| **2.** | Machine Learning, McGraw-Hill 1st Edition 1997 | Tom M. Mitchell |
| **3.** | Neural Networks for Pattern Recognition, Clarendon Press 1st edition 1995 | Bishop, Christopher |
| **Reference Books:** | | |
| **1.** | Machine Learning: An Artificial Intelligence Approach, Springer 1st edition 1993 | Ryszard, S., Michalski, J. G. Carbonell and Tom M. Mitchell |
| **2.** | Machine Learning: An Algorithmic Perspective, CRC Press 2nd Edition 2014 | Stephen Marsland |
| **3.** | Introduction to Machine Learning (Adaptive Computation and Machine Learning), MIT Press 4th Edition 2020 | Ethem Alpaydin |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://www.youtube.com/watch? v=fC7V8QsPBec&list=PL1xHD4vteKYVpaIiy295pg6_SY5qznc77&index=2 |
| **Module 2** | https://www.youtube.com/watch? v=OTAR0kT1swg&list=PL1xHD4vteKYVpaIiy295pg6_SY5qznc77&index=3 https://www.youtube.com/watch?v=OCwZyYH14uw https://www.youtube.com/watch?v=9_LY0LiFqRQ https://www.youtube.com/watch?v=EYeF2e2IKEo https://www.youtube.com/watch?v=_PwhiWxHK8o https://www.youtube.com/watch?v=wTF6vzS9fy4 https://www.youtube.com/watch?v=lt65K-REdHw |
| **Module 3** | https://www.youtube.com/watch? v=HTSCbxSxsg&list=PL1xHD4vteKYVpaIiy295pg6_SY5qznc77&index=4 https://www.youtube.com/watch?v=NnlS2BzXvyM https://www.youtube.com/watch?v=7enWesSofhg |
| **Module 4** | https://youtu.be/rthuFS5LSOo |
| **Module 5** | https://www.youtube.com/watch? v=9vMpHk44XXo&list=PL1xHD4vteKYVpaIiy295pg6_SY5qznc77&index=5 |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| **Course Code:** BBCA0412 | **Course Name: Image Editing with Photoshop** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **3** | **0** | **0** | **3** |

**Pre-requisite:** Basic Computer Skills

**Course Objectives:** To introduce the fundamentals of Adobe Photoshop and digital imaging.To develop practical skills in photo manipulation, typography, and graphic design. To prepare students for roles in media, business, and creative industries through digital content creation

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Understand and navigate the Photoshop interface, tools, and workspace customization. | K2 |
| **CO2** | Apply image editing techniques and use typography tools for design elements. | K3 |
| **CO3** | Understand the difference between supervised and unsupervised learning. | K4 |
| **CO4** | Apply creative effects and compile a professional digital portfolio. | K5 |
| **CO5** | Use Photoshop automation tools and integrate with Adobe Creative Cloud for enhanced productivity | K5 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | **3** | **2** | **1** | **-** | **-** | **-** | **-** | **-** |
| **CO2** | **3** | **3** | **2** | **2** | **-** | **-** | **-** | **-** |
| **CO3** | **3** | **3** | **3** | **3** | **-** | **-** | **-** | **-** |
| **CO4** | **2** | **2** | **3** | **3** | **-** | **-** | **-** | **-** |
| **CO5** | **2** | **3** | **3** | **3** | **-** | **-** | **-** | **-** |

**Course Contents / Syllabus**

| **Module 1** | **Introduction to Photoshop & Selections** | **8 hours** |
|---|---|---|

Overview of Photoshop interface and workspace, customizing panels and tools, understanding files formats and resolution, Basic navigation: zoom, pan, rulers, and guides, Working with layers and selections (Marquee, Lasso, Quick Selection, Magic Wand)

| **Module 2** | **Image Editing & Typography** | **8 hours** |
|---|---|---|

Color correction (Brightness, Contrast, Levels, and Curves), Retouching tools: Clone Stamp, Healing Brush, Patch Tool, Content-Aware Fill and Liquefy tool, Typography and text effects, Layer styles and blending modes

| **Module 3** | **Advanced Compositing & Web Design** | **8 hours** |
|---|---|---|

Smart Objects and Smart Filters, Double exposure and surreal effects, Photo compositing and blending, designing graphics for web and social media, Exporting images for different platforms

| **Module 4** | **Special Effects & Final Project** | **8 hours** |
|---|---|---|

Applying artistic filters and effects, creating lighting and shadow effects, Digital painting and brush techniques, assembling a digital portfolio, Presenting and critiquing work.

| **Module 5** | **Automation & Workflow Efficiency** | **8 hours** |
|---|---|---|

Using Photoshop Actions to automate repetitive tasks, Batch processing and scripts for workflow optimization, Customizing Photoshop with plug-in and extensions, Integration with other Adobe Creative Cloud applications, Best practices for file organization and version control.

| **Total Lecture Hours** | **40 hours** |
|---|---|

**Textbook:**

| | | |
|---|---|---|
| **1.** | Adobe Photoshop Classroom in a Book (latest edition), Adobe Press 1st Edition 2024 | |

| | | |
|---|---|---|
| **2.** | Adobe Photoshop CS4 Bible, Wiley 1st Edition 2009 | Stacy Cates, Simon Abrams, Dan Moughamian |
| **3.** | Adobe Photoshop , V&S Publishers 1st Edition 2023 | Kumar Bittu |
| **Reference Books:** | | |
| **1.** | Photoshop(R) 7: The Complete Reference | Fuller Laurie |

NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://www.youtube.com/watch?v=IaJqMcOMuDM<br>https://www.youtube.com/watch?v=4CGe2iHKFNc |
| **Module 2** | https://www.youtube.com/watch?v=rfOBX8dN8b8<br>https://www.youtube.com/watch?v=HfwpnMlJZbY |
| **Module 3** | https://www.youtube.com/watch?v=xxu2kqAJ9S4<br>https://www.youtube.com/watch?v=1-w1a_5Qd2w |
| **Module 4** | https://www.youtube.com/watch?v=LS-7A6mt6cU<br>https://www.youtube.com/watch?v=PV5xIzQNepE |
| **Module 5** | https://www.youtube.com/watch?v=pHsxGXnL_hE<br>https://www.youtube.com/watch?v=d_9FJr-kpNY |

**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY**

**GREATER NOIDA-201306**

**(An Autonomous Institute)**

**School of Computer Applications**

| **Course Code:** BBCA0401 | **Course Name: Cognitive Ability** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **3** | **0** | **0** | **3** |

**Pre-requisite:** Basic understanding of elementary mathematics

**Course Objectives:** The objective of this course is to develop students' quantitative aptitude and logical reasoning skills through number theory, analytical puzzles, and business mathematics, enabling them to solve real-world and competitive exam problems with speed, accuracy, and logical thinking.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Apply fundamental number theory concepts such as divisibility, HCF & LCM, remainder theorem, and cyclicity to solve quantitative problems efficiently. | K2, K3 |
| **CO2** | Solve problems involving logical reasoning and analytical thinking, including direction sense, blood relations, series patterns, and time-based puzzles like clocks and calendars. | K3 |
| **CO3** | Solve problems involving Percentage, Ratio, Proportion, Partnership, Problem of ages and coding decoding. | K2, K3 |
| **CO4** | Solve real-life business math problems involving percentages, profit and loss, discounts, interest calculations, averages, mixtures, and ratios using appropriate mathematical methods | K2, K3 |
| **CO5** | Solve quantitative aptitude problems involving time and work, wages, pipes and cisterns, speed-distance-time, and race-related scenarios, using mathematical formulas and real-world applications. | K2,K3 |
| | | |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | **1** | **1** | **1** | **1** | **-** | **-** | **-** | **-** | **-** | **-** |
| **CO2** | **1** | **1** | **1** | **1** | **-** | **-** | **-** | **-** | **-** | **-** |
| **CO3** | **1** | **1** | **1** | **1** | **-** | **-** | **-** | **-** | **-** | **-** |
| **CO4** | **1** | **1** | **1** | **1** | **-** | **-** | **-** | **-** | **-** | **-** |
| **CO5** | **1** | **1** | **1** | **1** | **-** | **-** | **-** | **-** | **-** | **-** |

**Course Contents / Syllabus**

| **Module 1** | **Speed Math and Basic Number System** | **8 hours** |
|---|---|---|
| Classification of number, Divisibility Rule, Factors, Factorization, HCF & LCM, It's Application, Direction and Sense | | |
| **Module 2** | **Advance Number System and Logical Reasoning** | **8 hours** |
| Unit digits, Last two digits, Remainder Theorem, Trailing zero's, Highest power, Blood Relation, Number Series and Letter Series | | |
| **Module 3** | **Business Math and Logical Reasoning-I** | **8 hours** |
| Alpha numeric series, Coding Decoding, Percentage, Ratio and Proportion, Partnership, Problem of ages | | |
| **Module 4** | **Business Math and Logical Reasoning - II** | **8 hours** |
| Profit and Loss, Discount, Simple Interest and Compound Interest, Clock and Calendar | | |
| **Module 5** | **Arithmetic** | **8 hours** |
| Average , Mixture & Allegation, Time and Work, Pipe and Cistern, Time speed and distance, Boat and Stream | | |
| | **Total Lecture Hours** | **40 hours** |

**Reference Books:**

| S.No | Book Title | Author |
|---|---|---|
| **1** | Quicker math | M. Tyra (BSC publication co. Pvt. Ltd) |
| **2** | Quantitative Aptitude | RS Aggarwal |
| **3** | Verbal & Non-Verbal Reasoning | RS Aggarwal |
| **4** | Quantitative Aptitude - Quantum CAT | Sarvesh K Verma |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| Course Code: BBCA0451 | Course Name: Web Technologies | L | T | P | C |
|---|---|---|---|---|---|
| Course Offered in: BCA | | 0 | 0 | 6 | 3 |

**Pre-requisite:** Student should have basic knowledge of HTML, CSS

**Course Objectives:** The objective of this course is to provide students with a comprehensive understanding of Web Technology, focusing on the development of dynamic, responsive, and interactive websites.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describing the concepts of web technology, internet and Web Designing, | K2 |
| **CO2** | Design static and dynamic web pages using HTML and CSS, | K3 |
| **CO3** | Implementing client-side script programming using JavaScript | K3 |
| **CO4** | Discuss the basics of server-side scripting using PHP | K2 |
| **CO5** | Demonstrate an in-depth understanding of advanced PHP syntax and develop dynamic and efficient web applications. | K3 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | 2 | 1 | 1 | 2 |
| CO3 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 2 |
| CO4 | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 2 |
| CO5 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 |

**Course Contents / Syllabus**

| Module 1 | Introduction to Web Technology & Basics of HTML | 6 hours |
|---|---|---|

**Introduction to Web Technology**: Internet, Basic Internet Terminology, World Wide Web, Web page, home page, Web site
**Introduction to HTML**: Essential Tags, Tags and Attributes, Text Styles and Text Arrangements, Text, Effects, Exposure to Various Tags (DIV, MARQUEE, NOBR, DFN, HR, List tag , Comment, IMG), Color and Background of Web Pages, Lists and their Types, Attributes of Image Tag, Hypertext, Hyperlink and Hypermedia, Links, Anchors and URLs, Links to External Documents, Different Section of a Page and Graphics, Footnote and E-Mailing, Creating Table

| Module 2 | HTML&CSS | 6 hours |
|---|---|---|

**HTML Frames:** Frames and Framesets.
**HTML forms:** HTML forms.
**Style sheets:** Introduction to CSS, need for CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, Positioning using CSS.

| Module 3 | JAVASCRIPT | 6 hours |
|---|---|---|

**Basics of Javascript:** Introduction to JavaScript: Advantages of Javascript, Difference between Javascript and Jscript; Basic Programming Techniques: Data Types and Literal, Creating Variables and Javascript Array; Operators and Expressions in javascript: Arithmetic Operators, Logical Operators, Comparison Operators, String Operators, Conditional Operators; Javascript Programming Constructs: Conditional checking, Loops
**Advance JavaScript:** Functions in JavaScript: Built in Functions and User Defined Functions; Dialog Boxes: Alert Dialog Box, Confirm Dialog Box, Prompt Dialog Box; JavaScript Document Object Model (DOM): Object hierarchy in DOM, Event Handling; Form Object: Form Object's Methods and Properties, Text Element, Button Element, etc; Other Built in Objects in Javascript, String, Math and Date Object; Writing Client-Side Validations from HTML Form Elements.

| Module 4 | Basics of PHP | 6 hours |
|---|---|---|

**Basics of PHP;** PHP: Downloading, installing, configuring PHP, basic syntax of PHP program, Variables and data types, operators, expressions and statements, decision and looping
**PHP Arrays & Functions:** Arrays, Functions, Browser control and detection, string, Form processing

| Module 5 | Advance PHP | 6 hours |
|---|---|---|

**Database Connectivity:** Connecting to database (My SQL as reference), executing simple queries, handling results, Handling sessions and cookies.

| | | |
|---|---|---|
| **File Handling in PHP:** File operations like opening, closing, reading, writing, appending, deleting etc. on text and binary files, listing directories | | |
| **Total Lecture Hours** | | **30 hours** |
| **Textbook:** | | |
| **S.No** | **Book Title** | **Author** |
| **1** | "HTML, DHTML. JavaScript, and PHP", BPB Publications, 5thEdition, 2005 | Bayross Ivan |
| **2** | "Web Technology and Design", New Age International, Second edition ,"2022" | Xavier,C |
| **3** | Internet and World Wide Web How to program, Pearson, 5th edition (2012) | P.J.Deitel &H.M.Deitel |
| **4** | The PHP Complete Reference, McGrawHillEducation, 2007 | Steven Holzner |
| **Reference Books:** | | |
| **S.No** | **Book Title** | **Author** |
| **1** | HTML5 for Web Designers, 2nd Edition 2016 | Jeremy Keith |
| **2** | "Web Technologies Black Book",2009 | dreamTech |
| **3** | PHP and MySQL, Prentice Hall 1st Edition 2006 | Ellie Quigley, |
| **4** | PHP: A Beginner's Guide, , McGraw Hill Education, 2008 | Vikram Vaswani |
| **5** | The Art and Science of CSS: Create Inspirational, Standards-Based Web Designs, SitePoint 1st Edition 2007 | Cameron Adams |

## NPTEL/ Youtube/ Faculty Video Link:

| | |
|---|---|
| **Module 1** | https://www.youtube.com/watch?v=HcOc7P5BMi4&t=2107s |
| **Module 2** | https://www.youtube.com/watch?v=KqJikDzb3l4&t=522s<br>https://www.youtube.com/watch?v=Edsxf_NBFrw |
| **Module 3** | https://www.youtube.com/watch?v=ajdRvxDWH4w&list=PLGjplNEQ1it_oTvuLRNqXfz_v_0pq6unW |
| **Module 4** | https://www.youtube.com/watch?v=1SnPKhCdlsU&t=54s |
| **Module 5** | https://www.youtube.com/watch?v=R1djM9B0ay0&t=2s |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| LAB Course Code: BBCA0451 | LAB Course Name: Web Technologies | L | T | P | C |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **6** | **3** |

**Pre-requisite:** Student should have basic knowledge of HTML, CSS

**Course Objectives:**

The objective of this course is to provide students with a comprehensive understanding of Web Technology, focusing on the development of dynamic, responsive, and interactive websites.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describing the concepts of web technology, internet and Web Designing, | K2 |
| **CO2** | Design static and dynamic web pages using HTML and CSS, | K3 |
| **CO3** | Implementing client side script programming using JavaScript | K3 |
| **CO4** | Describe basics of server-side scripting using PHP | K2 |
| **CO5** | Demonstrate an in-depth understanding of advanced PHP syntax and develop dynamic and efficient web applications. | K3 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 1 | 2 | 1 | 1 | 1 | 2 |
| **CO2** | 3 | 2 | 3 | 3 | 2 | 1 | 1 | 2 |
| **CO3** | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 2 |
| **CO4** | 3 | 2 | 3 | 3 | 1 | 1 | 1 | 2 |
| **CO5** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 |

**List Of Practical's (Indicative & Not Limited To)**

1. Write a program for different formatting tags used in HTML.
2. Write a program for different types of list.
3. Write a program to show implementation of nested list.
4. Write a program for printing class time table showing use of rowspan and colspan.
5. Program to show the use of target attribute with different values
6. Write a program to create a web page using img tag with all its attributes.
7. Write a program to create a web page using image as hyperlink.
8. Create a small website of four pages showing use of external link
9. Write a program to set a background image for both the page and single elements on the page and control the repetition of the image with the background-repeat property
10. Write a program to create a web page showing the use of font and text attribute of CSS.
11. Write a program to create a web page showing the use of color and background attribute of CSS.
12. Write html code to develop a webpage having two frames that divide the webpage into two equal rows and then divide the row into equal columns fill each frame with a different background color.
13. Write a program to create a web page showing the use of inline, internal and External CSS.
14. Write a program to create a web page showing the use of implementation of BOX model in CSS.
15. Write a program to create a web page showing the use of CSS positioning.
16. Write a program to design web pages for your college containing a description of the courses, departments, faculties, library etc, use href, list tags.
17. Create your resume using HTML tags also experiment with colors, text , link , size and also other tags you studied.
18. Design the static web pages required for an online book store web site
    1. Design The login page contains the user's name and the password of the user to authenticate.

| |
|---|
| 2. Design The catalogue page should contain the details of all the books available in the web site in a table. |
| 19. Design of the cart page and the registration page required for online book store. |
| 20. Write a program to create a "registration form "with the following fields<br>• Name (Textfield)<br>• Password (password field)<br>• E-mail id (text field)<br>• Phone number (text field)<br>• Sex (radio button)<br>• Date of birth (3 select boxes)<br>• Languages known (check boxes – English, Telugu, Hindi, Tamil)<br>• Address (text area) |
| 21. Design a web page using CSS (Cascading Style Sheets) which includes the following:<br>1. Use different font, styles: In the style definition you define how each selector should work .<br>2. Then, in the body of your pages, you refer to these selectors to activate the styles. |
| 22. Write a JavaScript Program to Print Hello World. |
| 23. Write a JavaScript Program to Add Two Numbers |
| 24. Write a JavaScript Program to Find the Square Root |
| 25. Write a JavaScript Program to Calculate the Area of a Triangle |
| 26. Develop simple calculator for addition, subtraction, multiplication and division operation using JavaScript |
| 27. Write a JavaScript Program to Swap Two Variables |
| 28. Write a JavaScript Program to Convert Celsius to Fahrenheit |
| 29. Write a JavaScript Program to Convert Decimal to Binary |
| 30. Write a JavaScript Program to Check if a number is Positive, Negative. |
| 31. JavaScript Program to Find the Factorial of a Number |
| 32. JavaScript Program to Check Prime Number |
| 33. JavaScript Program to Display the Multiplication Table |
| 34. JavaScript Program to Print the Fibonacci Sequence |
| 35. JavaScript Program to Check Armstrong Number |
| 36. JavaScript Program to Find the Sum of Natural Numbers |
| 37. Write a JavaScript code to enter week day number and print day name. |
| 38. JavaScript Program to Set a Default Parameter Value For a Function |
| 39. JavaScript Program to Illustrate Different Set Operations |
| 40. JavaScript Program to Check If a Variable is of Function Type |
| 41. JavaScript Program to Pass Parameter to a setTimeout() Function |
| 42. JavaScript Program to Pass a Function as Parameter |
| 43. Create HTML Page with JavaScript which takes Integer number as input and tells whether the number is ODD or EVEN. |
| 44. Write a program to create dialogue boxes using JavaScript. |
| 45. JavaScript Program to Create Objects in Different Ways |
| 46. JavaScript Program to Loop Through an Object |
| 47. JavaScript Program to Merge Property of Two Objects |
| 48. JavaScript Program to Remove a Property from an Object |
| 49. JavaScript Program to Display Date and Time |
| 50. JavaScript Program to Check Leap Year |
| 51. JavaScript Program to Format the Date |
| 52. JavaScript Program to Display Current Date |
| 53. Write a program to create an Array in JavaScript |
| 54. JavaScript Program to Convert Objects to Strings |
| 55. JavaScript Program to Include a JS file in Another JS file |
| 56. JavaScript Program to Get File Extension |
| 57. Create a small website for 4 web pages and connect them using external linking. |

| |
|---|
| 58. JavaScript Program to Validate An Email Address |
| 59. Write a Java Script program for login form validation. |
| 60. Write JavaScript to validate the following fields of the above registration page.<br>1. Name (Name should contains alphabets and the length should not be less than 6 characters).<br>2. Password (Password should not be less than 6 characters length).<br>3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)<br>4. Phone number (Phone number should contain 10 digits only). |
| 61. Install and configure PHP, web server, MYSQL |
| 62. Write a program to print “Welcome to PHP” |
| 63. Write a simple PHP program using expressions and operators |
| 64. Write a PHP program to demonstrate the use of Decision making control structures using a. If statement b. If-else statement c. Switch statement |
| 65. Write a php program to check whether given number is palindrome or not. |
| 66. Write a php program to check whether given number is Armstrong or not. |
| 67. Write a Mathematical calculator program. |
| 68. Write a PHP program to demonstrate the use of Looping structures usinga) While statement b) Do-while statement c) For statement d) Foreach statement |
| 69. Write a PHP program for creating and manipulating a) Indexed array b) Associative array c) Multidimensional array |
| 70. A. Write a PHP program to- • Calculate length of string. • Count the number of words in string without using string functions |
| 71. Write a simple PHP program to demonstrate use of various built-in string functions. |
| 72. Write a simple PHP program to demonstrate use of simple function and parameterized function. |
| 73. Design a web page using following form controls: a. Text box, b. Radio button, c. Check box, d. Buttons |
| 74. Create a PHP page for login page without sql connection. |
| 75. Create a PHP page for login page with sql connection. |
| 76. Write a PHP program for sending and receiving plain text message (email). |
| 77. Develop web page with data validation. |
| 78. Write simple PHP program to - a. Set cookies and read it. b. Demonstrate session management |
| 79. Write a PHP program for sending and receiving plain text message (email). |
| 80. Develop a simple application to - a) Enter data into database b) Retrieve and present data from database |
| 81. Develop a simple application to Update, Delete table data from database |
| 82. Write a php program to Read from existing file. |
| 83. Write a php program to Write a file |
| 84. Write a php program to design Curriculum Vitae. |
| 85. Write a php program to calculate Date and Time function . |
| 86.Create a PHP page for login system using session. |
| **Total Hours: 42 hrs.** |

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| LAB Course Code: BBCA0452 | LAB Course Name: Database Management System Lab | L | T | P | C |
|---|---|---|---|---|---|
| Course Offered in: BCA | | 0 | 0 | 4 | 2 |

**Pre-requisite: Basic Programming Techniques**.

**Course Objectives:** To introduce relational and non-relational databases with emphasis on how to create, organize and retrieve information

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Design ER diagram of database for solving the real-world problems. | K5 |
| **CO2** | Design a database and put restrictions using Structured Query Language (SQL). | K3 |
| **CO3** | Implement DML commands and aggregate functions using SQL | K3 |
| **CO4** | Develop queries on joins, clauses and logical operators using SQL | K3 |
| **CO5** | Implement NoSQL queries using MongoDB. | K3 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 3 | 2 | 3 | 1 | 1 | 1 | 1 |
| CO2 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 |
| CO3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 |
| CO4 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 |
| CO5 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 |

**List Of Practical's**

1. Creating ER Diagram for a Library Management System. Library databases haveentities like books, students, staff and reports. Also implement the relationship and cardinalities between the entities with their relevant attribute

2. Design an ER diagram for a Banking Management Systems. Bank includes entities such as customers, accounts, branch and loan. Also implement the relationship and cardinalities between the entities with their relevantattribute

3. Data Definition Language Queries:

Create Tables TEACHER, SUBJECT, TEACHES.

TEACHER(Teacherid, Name, dept, salary, dob, Address, phoneno)

SUBJECT(subjectcode, subname, credit, marks, subtype)

TEACHES(teacherid, subjectcode, class)

a) Add a new attribute specialization in teacher table
b) Remove attribute address from teacher table
c) Modify the data type of phone no attribute
d) Change the name of attribute dob to date of birth
e) Change a table's name teacher to teac
f) Use truncate to delete the contents of teaches table
g) Remove subject table from database

4. Data Manipulation Language Queries

a) Insert at least 10 records in table teacher, subject and teaches
b) Show the contents in tables teacher, subject and teaches
c) Find the name and dept of all teachers
d) Find the name and teacherid of all teachers who stay in 'Delhi'
e) Find all distinct departments of all teachers
f) Delete the record of the teacher whose teacherid is 4001
g) Delete all records of teacher table

h) Delete all records of teachers whose section starts with capital A.
i) Find the teacher names which have 'al' in any position
j) Find the teacher name where 'N' is in the second position
k) Find the name of teachers whose name starts with 'D' and ends with 'A'
l) Change the address of all teachers to 'PUNE'
m) Change the address of teacher 'Arti' to 'Banglore'
n) Apply arithmetic operators on salary column of teacher table for the teacher who has teacherid = 2001

5 Queries with Constraints
a) Create the subject table with Primary Key Constraint
b) Create teaches table with foreign key Constraint
c) Create an supplier table with UNIQUE Constraint
d) Create part Table with Check Constraints
e) 5. Create project table with Default Constraint

6 Aggregate Functions:
a) Find the minimum, maximum, average and sum of salaries of teachers
b) Count the total number of teachers present
c) Retrieve the average salaries of all teachers who are in 'BCA' department

7 Queries on GROUP BY, HAVING AND ORDER BY Clauses
a) Display total salaries of teachers by each department
b) Find the address and the number of teachers staying at that address for addresses which have more than 1 teacher.
c) Find all teachers sorted by address in ascending order and department in descending order
d) Find the department and the number of teachers in that department

8 Queries on Operators
a) Find the name, department and salary of teachers which have salary equal to or greater than 20000 and less than or equal to 60000.
b) Find the name, teacherid and departments of teachers who are in 'CSE' department or 'IT' department
c) Find the name, department and salary of teachers for which salary is 20000 and department = 'BCA'
d) Find the subjectid and subname of subjects, which has the word 'NET' anywhere in its subname.
e) Find the subjectid and subname of subjects with subjectname either 'OS' or 'DBMS'
f) List the subjects which have credits 2, 3, or 4.
g) Find all the distinct subtype of subjects.

9 Join Operators
a) Perform Inner join on two tables
b) Perform Natural Join on two tables
c) Perform Left Outer Join on tables
d) Perform Right Outer join on tables
e) Perform Full Outer Join on tables

10 Mongo DB Queries
a) Create a collection.
b) Insert documents into Created Collection
c) Use insertMany() to insert more records
d) View the inserted records, raw and formatted
e) Select all documents in collection
f) Find count of all customers
g) Show the records which have age equal to 18
h) Find all records which have fees between 1500 and 2500
i) retrieve all documents from the cust collection where status equals either "D" or "E"
j) Retrieve all documents where grade is equal to 'B' AND (fees is less than 2000 OR name starts with letter 'K')

k) Retrieve all documents where grade is equal to F OR fees is less than 3000
l) Update record with id 1, incrementing their fees by 70
m) Update the record of jack, set address to 'Pune' and phoneno to '665521122'
n) Delete all records which have fees greater than 2000
o) Display only the grade and fees.
p) Get the grade, fees and custname of all records and sort by custname in ascending order.
q) Sort the Customers on their fees by descending order and get only first 4 records only
r) Update the postal code of 1st record and view it
s) select from the cust collection all documents where the grade equals "B":
t) Retrieve the document with exact value '7'

**Total Hours: 40 hrs.**

**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY**

**GREATER NOIDA-201306**

**(An Autonomous Institute)**

**School of Computer Applications**

| **LAB Course Code:** BBCA0414 | **LAB Course Name: CRM Administration Lab** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **2** | **1** |

**Pre-requisite:** Creative thinking and which is being used by the creative talent in your business areas.

**Course Objectives:** To make the students understand the organizational need, benefits and process of creating long-term value for individual customers. To disseminate knowledge regarding the concept of e-CRM and e- CRM technologies. To enable the students, understand the technological and human issues relating to implementation of Customer Relationship Management in the organizations.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Describe the fundamental concepts of Customer Relationship Management. | **K2** |
| **CO2** | Configure and customize Salesforce CRM to support various business needs. | **K3** |
| **CO3** | Implement security and data protection measures in CRM systems. | **K4** |
| **CO4** | Develop automation processes using Salesforce tools like Flow and Process Builder. | **K5** |
| **CO5** | Generate reports and dashboards to support business decision-making. | **K6** |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| **CO-PO Mapping** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** |
|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 2 |
| **CO2** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 2 |
| **CO3** | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 |
| **CO4** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 |
| **CO5** | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 3 |

**List Of Practical's (Indicative & Not Limited To)**

1.Quick Start: Lightning App Builder

2.Prepare Your Salesforce Org for Users

3.Customize an Org to Support a New Business Unit

4.Protect Your Data in Salesforce

5.Customize a Sales Path for Your Team

6.Setup the Service Console

7.Build a Discount Approval Process

8.Quick Start Process Builder

9.Build a Simple Flow

10.Build a Battle Station App

11.Customize a Salesforce Object

12.Create Reports and Dashboards for Sales and Marketing Managers

13.Improve Data Quality for Your Sales and Support Teams

14.Create a Process for Managing Support Cases

**Total Hours: 40 hrs.**

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| LAB Course Code: BBCA0416 | LAB Course Name: Machine Learning Lab | L | T | P | C |
|---|---|---|---|---|---|
| Course Offered in: BCA | | 0 | 0 | 2 | 1 |

**Pre-requisite: Basic knowledge of Python and AI**

**Course Objectives:**

The objective of the Machine Learning Lab is to provide hands-on experience with implementing and experimenting with key machine learning algorithms. It aims to enhance students' understanding of model training, evaluation, and real-world application using programming tools and datasets.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Apply fundamental regression techniques (Linear and Logistic) to model relationships within data. | K3 |
| **CO2** | Implement and analyze classic machine learning algorithms such as k-NN, Decision Trees (ID3), SVM, Naïve Bayes, and ANN using real-world datasets. | K4 |
| **CO3** | Compare and evaluate clustering techniques such as K-Means and Expectation-Maximization (EM) to assess the quality of results. | K5 |
| **CO4** | Demonstrate the use of ensemble learning and advanced regression methods like Gradient Boosting and Locally Weighted Regression for performance optimization. | K3 |
| **CO5** | Design and conduct machine learning experiments, and compute key performance metrics including accuracy, precision, and recall for model evaluation. | K6 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 3 | - | - | - | 2 |
| CO2 | 3 | 2 | 3 | 3 | 1 | - | 1 | 2 |
| CO3 | 3 | 3 | 2 | 3 | - | - | 1 | 2 |
| CO4 | 3 | 3 | 3 | 3 | 1 | - | 1 | 3 |
| CO5 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 3 |

**List Of Practical's (Indicative & Not Limited To)**

1. Write a program to perform various types of regression (Linear & Logistic).
2. Implement Apriori algorithm using sample data in Python.
3. Write a program to demonstrate the working of the decision tree based ID3algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
4. Write a program to implement k-Nearest Neighbour algorithm to classify the iris dataset. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.
5. Apply EM algorithm to cluster a set of data. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering.
6. Implement Support Vector Machine using Scikit-learn.
7. Implement the non-parametric Locally Weighted Regression algorithm to fit data points. Select appropriate data set for your experiment and draw graphs.
8. Implement Gradient Boosting Machine Ensemble in Python.
9. Implement of ANN algorithm using a sample dataset.
10. Implement naïve Bayesian Classifier model. Write the program to calculate the accuracy, precision, and recall for your data set.

**Total Hours: 40 hrs.**

# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY
## GREATER NOIDA-201306
### (An Autonomous Institute)
### School of Computer Applications

| LAB Course Code: BBCA0415 | LAB Course Name: Image Editing with Photoshop Lab | L | T | P | C |
|---|---|---|---|---|---|
| Course Offered in: BCA | | 0 | 0 | 2 | 1 |

**sPre-requisite: Basic Knowledge of computer**

**Course Objectives:**

To familiarize students with the Adobe Photoshop interface and workspace.To enable students to perform image editing using selection, correction, and retouching tools.To build skills in layer management, typography, digital painting, and web design.To encourage creativity through compositing, special effects, and final project creation.To introduce automation tools and integration with Adobe Creative Cloud apps.

| **Course Outcome:** After completion of the course, the student will be able to | | Bloom's Knowledge Level (KL) |
|---|---|---|
| **CO1** | Navigate and customize the Photoshop interface and use selection tools effectively. | K2 |
| **CO2** | Perform basic and advanced image corrections, masking, and retouching. | K3 |
| **CO3** | Work with layers, blending modes, smart objects, and apply filters non-destructively. | K4 |
| **CO4** | Design web graphics and digital artworks using painting and special effects. | K5 |
| **CO5** | Automate repetitive tasks and compile a professional digital portfolio. | K6 |

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | 2 | 1 | 1 | - | 1 |
| CO2 | 3 | 3 | 2 | 2 | 1 | 1 | - | 1 |
| CO3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 | 2 |
| CO4 | 3 | 3 | 3 | 3 | 3 | 2 | - | 2 |
| CO5 | 3 | 3 | 3 | 3 | 3 | 3 | - | 3 |

**List Of Practical's (Indicative & Not Limited To)**

1.Navigating Photoshop: Interface, tools, and workspace customization

2.Creating and Managing Layers: Layer properties, blending modes, grouping

3.Making Selections: Marquee, Lasso, Quick Selection, Magic Wand

4.Refining Selections & Masking: Layer masks, Select and Mask, feathering

5.Image Corrections: Adjusting brightness/contrast, levels, curves

6.Retouching Tools: Clone Stamp, Healing Brush, Patch Tool, Content-Aware Fill

7.Typography: Text layers, formatting, layer styles (shadow, glow)

8.Composite Images: Merging multiple images with masks and blend modes

9.Smart Objects & Filters: Use of Smart Objects and Smart Filters

10.Web Graphics: Designing banners, icons, and UI components

11.Special Effects: Artistic filters, lighting effects, layer effects

12.Digital Painting: Custom brushes, smudging, blending

13.Automation: Recording Actions, batch processing

14.Integration: Import/export with Illustrator and InDesign

15.Final Project: Create a comprehensive portfolio with selected works

**Total Hours: 40 hrs.**

**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY**

**GREATER NOIDA-201306**

**(An Autonomous Institute)**

**School of Computer Applications**

| **LAB Course Code:** BBCA0453 | **LAB Course Name: Workplace Communication Lab IV** | **L** | **T** | **P** | **C** |
|---|---|---|---|---|---|
| **Course Offered in: BCA** | | **0** | **0** | **4** | **2** |

**Pre-requisite: The students should have completed workplace communication course in semester III**

**Course Objectives:**

- Attain a high level of fluency and accuracy in professional communication.
- Develop the ability to communicate effectively and persuasively in real-world business scenarios.
- Acquire the skills and competencies necessary to excel in the workplace and drive career growth.

**Course Outcome:** After completion of the course, the students will be able to

1. Recall the key elements of maxing the placement process and functioning as a professional.
2. Comprehend complex conversations and formal texts to grasp tone and intent.
3. Demonstrate appropriate verbal and non-verbal communication for the workplace.
4. Analyse workplace communication practices to identify strengths and weaknesses.
5. Compose audience-centric, Industry-relevant, business documents that drive results.

**CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)**

| CO-PO Mapping | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 |
|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 2 |
| CO2 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 2 |
| CO3 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 2 |
| CO4 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 2 |

**List Of Practical**

1. **Introduction**
   - To the course · Exam Pattern · Anubhav Activity On score improvement
2. **Advanced Vocabulary**
   - The students will enhance their vocabulary through various exercises.
3. **Writing Short Essays**
   - The students will learn to logically arrange and develop ideas.
4. **Presentation Skills**
   - The students will learn to design and deliver effective presentations.
5. **Group Discussions**
   - Domain specific topics and on current affairs to improve the grasp of students
6. **Debate**
   - The students will learn persuasive speech and to differentiate between assertive and aggressive language.
7. **Verbal Ability**
   - Analogies · The students will practice solving simple analogies.
   - Sentence Correction · The students will learn to spot grammatical errors and correct them.
8. **Video Conferencing**
   - The students will develop the skills to engage confidently in online communication, such as video conferencing.

9. **Reporting**
   - **The students practice converting direct to indirect speech.**

10. **Describing real -life events**
    - **The students will learn to narrate in front of an audience.**

11. **Story Reading**
    - **The students will learn correct pronunciation and voice modulation.**

12. **Impromptu Speaking**
    - **Preparing and speaking on random topics**

13. **Role Play**
    - **The students learn to carry out conversations in various professional settings.**

14. **Online Presence; Writing Blogs & Creating Vlogs**
    - **The students learn the nuances of what to write and what not to write on social media.**
    - **The students will learn to write effective blogs for outreach and create engaging vlogs to communicate their ideas.**

15. **Elevator Pitch**
    - **Crafting a winning elevator pitch for showcasing innovative ideas, products, and services.**

16. **Interview Skills**
    - **Analyzing interview clips and techniques**
    - **Mock interviews and feedback**

17. **Podcast Listening and Summarization**
    - **Listening to understand the key points.**

18. **Virtual etiquette**
    - **Online and Mobile Etiquette in virtual workplace meetings**
    - **Camera and Microphone Etiquette/ Chat Box Communication**
    - **Dress Code for Virtual Meetings/ Background and Environment Setup**

19. **Professional Email Skills:**
    - **Responding to emails with clarity, tact, and professionalism**

20. **Visual Communication**
    - **Interpreting infographics and data visualizations**

21. **Time Management for Effective Communication**
    - **Prioritizing tasks and managing time for efficient communication.**

22. **Peer Evaluation**
    - **The students will learn to evaluate and provide feedback.**

| |
|---|
| 23. **Personal Communication Audit**<br>• **Reflecting on communication development and progress** |
| 24. **Action Plan Development**<br>• **The students will create an action plan to apply their communication skills in real-life scenarios.** |
| **Total Hours: 40 hrs.** |