



**Adusumilli Gopalakrishnaiah & Sugarcane Growers**  
**SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE**

Vuyyuru-521165, Krishna District, Andhra Pradesh

Sponsors: Siddhartha Academy of General & Technical Education, Vijayawada

An Autonomous college in the Jurisdiction of Krishna University

Accredited by NAAC "A" Grade \* ISO 9001:2015 Certified Institution

**DEPARTMENT OF COMPUTER SCIENCE**

**List of Board of Studies Members**

S. No	Name of the Staff member, Designation & College	Role	Signature
1	<b>T. Naga Prasada Rao</b> , Head, Department of Computer Science, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru	Chairman	
2	<b>Dr. M. Babu Reddy</b> , Principal, Krishna University College of Engineering and Technology, Machilipatnam	University Nomine	
3	<b>Dr. P. J. S Kumar</b> , Principal, HOD, Department of Computer Science, A.N.R College, Gudivada	Subject Expert	
4	<b>Mr. K. Sridhar</b> , TPO, Department of Computer Science PB Siddhartha College of Arts & Science, Vijayawada	Subject Expert	
5	<b>R. Sowjanya</b> , .Net Developer, Maven Soft System Pvt. Ltd Madaapur, Hyderabad	Industrial Expert	
6	<b>Ms. S. Prabhavathi</b> , Lecturer in Computer Science, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru	Member	
7	<b>Ms. A. Sravani</b> , Lecturer in Computer Science, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru	Member	
8	<b>Sri. A. Naga Srinivasa Rao</b> , Lecturer in Computer Science, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru	Member	
9	<b>Sri. P. Sriram Teja</b> , Lecturer in Computer Science, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru	Member	
10	<b>Ms. O. Tejasri</b> , Lecturer in Computer Science, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru	Member	
11	<b>Sri. G. Mahesh</b> , Lecturer in Computer Science, A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru	Member	
12	<b>Ms. K. Supriya</b> , Student in M.Sc. (Computer Science), A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru	Member	
13	<b>Ms. R. Bhargavi</b> , Student in M.Sc. (Computer Science), A.G. & S.G. Siddhartha Degree College of Arts & Science, Vuyyuru	Member	

Minutes of the meeting of Board of Studies in Computer Science for III year V Semester B.Sc. (MPCs, MCCs, MSCs), B.Com (Computer Applications), and B.Com (E-Commerce-Computers), and II year IV Semester B.Sc. (MPCs, MCCs, MSCs), B.Com (Computer Applications), and B.Com (E-Commerce-Computers) and I year II Semester B.Sc. Honours (Computer Science), B.Sc. Honours (Mathematics), B.Sc. Honours (Physics), B.Sc. Honours (Chemistry), B.Com Honours (Computer Applications), & B.C.A. Honours of Adusumilli Gopalakrishnaiah & Sugarcane Growers Siddhartha Degree College of Arts & Science, Vuyyuru, Krishna District held on 15-03-2024 at 10.30 AM in the Department of Computer Science through offline / online mode.

### **AGENDA**

1. To discuss structure, syllabi and model paper of the Sixth Semester for B.Sc. (MPCS, MCCS, MSCS), B.Com (Computer Applications) & B.Com (E-Commerce-Computers) programmes for the students admitted in the academic year 2021-22 and onwards.
2. To discuss structure, syllabi and model paper of the Forth Semester for B.Sc. (MPCS, MCCS, MSCS), B.Com (Computer Applications) & B.Com (E-Commerce-Computers) programmes for the students admitted in the academic year 2022-23 and onwards.
3. To discuss Programme Educational Objectives (PEOs), Programme Outcomes (POs), Programme Specific Outcomes (PSOs), Course Outcomes (CO) and CO-PO mapping Matrix for B.Sc. Honours (Computer Science), B.Com Honours (Computer Applications) & B.C.A. Honours Single major programmes introduced from academic year 2023 – 24 and onwards.
4. To discuss structure, syllabi and Model paper of the second semester for B.Sc. Honours (Computer Science), B.Com Honours (Computer Applications) & B.C.A. Honours programmes for the students admitted from the academic year 2023 – 24 and onwards.

### **PROPOSALS**

1. It is proposed to continue the existing structure, syllabi & model papers of the Sixth Semester for B.Sc. (MPCS, MCCS, MSCS), B.Com (Computer Applications) programmes for the students admitted in the academic year 2021-22 and onwards.
2. It is proposed to introduce a new programme, structure, syllabi & model papers of the sixth semester for B.Com (E-Commerce-Computers) programme for the students admitted in the academic year 2021-22
3. It is proposed to continue the existing structure, syllabi & model papers of the fourth Semester for B.Sc (MPCS, MCCS, MSCS), B.Com (Computer Applications) & B.Com (E-Commerce-Computers) programmes for the students admitted in the academic year 2022-23 and onwards.
4. It is proposed to introduce a new programme structure with Programme Educational Objectives (PEOs), Programme Outcomes (POs), Programme Specific Outcomes (PSOs), Course Outcomes (COs) and CO-PO mapping Matrix for B.Sc. Honours (Computer Science), B.Com Honours (Computer Applications) & B.C.A. Honours single major programmes introduced in academic year 2023-24 and onwards. For proposed structure.

### **B.Sc. (MPCs, MCCs, MSCs) – VI Semester**

5. It is proposed to continue the same syllabus without changes for **SECCSCT01: WEB INTERFACE DESIGNING TECHNOLOGIES** course in VI Semester for B.Sc. (MPCs, MCCs, MSCs) programmes for the batch of students admitted in the academic year 2021-22
6. It is proposed to continue the same syllabus without changes of **SECCSCP01: WEB INTERFACE DESIGNING TECHNOLOGIES LAB** course in VI Semester for B.Sc. (MPCs, MCCs, MSCs) programmes for the batch of students admitted in the academic year 2021-22
7. It is proposed to continue the same syllabus without changes of **SECCSCT02: WEB APPLICATIONS DEVELOPMENT USING PHP AND MYSQL** course in VI Semester for B.Sc. (MPCs, MCCs, MSCs) programmes for the batch of students admitted in the academic year 2021-22
8. It is proposed to continue the same syllabus without changes of **SECCSCP02: WEB APPLICATIONS DEVELOPMENT USING PHP AND MYSQL LAB** course in VI Semester for B.Sc. (MPCs, MCCs, MSCs) programmes for the batch of students admitted in the academic year 2021-22

### **B.Com (Computer Applications) – VI Semester**

9. It is proposed to continue the same syllabus without changes of **SECCAT01: BIG DATA ANALYTICS USING “R”** course in VI Semester for B.Com (Computer Applications & E-Commerce-Computers) programmes for the batch of students admitted in the academic year 2021-22
10. It is proposed to continue the same syllabus without changes of **SECCAP01: BIG DATA ANALYTICS USING “R” LAB** course in VI Semester for B.Com (Computer Applications & E-Commerce-Computers) programmes for the batch of students admitted in the academic year 2021-22
11. It is proposed to continue the same syllabus without changes of **SECCAT07: DATA SCIENCE USING PYTHON** course in VI Semester for B.Com (Computer Applications & E-Commerce-Computers) programmes for the batch of students admitted in the academic year 2021-22
12. It is proposed to continue the same syllabus without changes of **SECCAP07: DATA SCIENCE USING PYTHON LAB** course in VI Semester for B.Com (Computer Applications & E-Commerce-Computers) programmes for the batch of students admitted in the academic year 2021-22

### **B.Com (E-Commerce-Computers) – VI Semester**

13. It is proposed to introduce new course of **SECCAT01: BIG DATA ANALYTICS USING “R”** course in VI Semester for B.Com (Computer Applications & E-Commerce-Computers) programmes for the batch of students admitted in the academic year 2021-22
14. It is proposed to introduce new course of **SECCAP01: BIG DATA ANALYTICS USING “R” LAB** course in VI Semester for B.Com (Computer Applications & E-Commerce-Computers) programmes for the batch of students admitted in the academic year 2021-22

15. It is proposed to introduce new course of **SECCAT07: DATA SCIENCE USING PYTHON** course in VI Semester for B.Com (Computer Applications & E-Commerce-Computers) programmes for the batch of students admitted in the academic year 2021-22

16. It is proposed to introduce new course of **SECCAP07: DATA SCIENCE USING PYTHON LAB** course in VI Semester for B.Com (Computer Applications & E-Commerce-Computers) programmes for the batch of students admitted in the academic year 2021-22

#### **B.Sc. (MPCs, MCCs, MSCs) – IV Semester**

17. It is proposed to continue the same syllabus without changes of **CSCT41C: Operating systems** course in IV Semester for B.Sc. (MPCs, MCCs, MSCs) programmes for the batch of students admitted in the academic year 2022-23

18. It is proposed to continue the same syllabus without changes of **CSCP41C: Operating systems LAB** course in IV Semester for B.Sc. (MPCs, MCCs, MSCs) programmes for the batch of students admitted in the academic year 2022-23

#### **B.Com (Computer Applications & E-Commerce-Computers) – IV Semester**

19. It is proposed to continue the same syllabus without changes of **CABT41A: Database Management Systems** course in IV semester for B.Com (Computer Applications & E-Commerce-Computers) for the batch of students admitted in the academic year 2022-23

20. It is proposed to continue the same syllabus without changes of **CABP41A: Database Management Systems LAB** course in IV semester for B.Com (Computer Applications & E-Commerce-Computers) for the batch of students admitted in the academic year 2022-23

21. It is proposed to continue the same syllabus without changes of **CCSCT42: Object Oriented Programming using Java** course in IV semester for B.Com (Computer Applications & E-Commerce-Computers) for the batch of students admitted in the academic year 2022-23

22. It is proposed to continue the same syllabus without changes of **CCSCP42: Object Oriented Programming using Java LAB** course in IV semester for B.Com (Computer Applications & E-Commerce-Computers) for the batch of students admitted in the academic year 2022-23

#### **B.Sc. Honours Computer Science – II Semester**

23. It is proposed to introduce **23CSMAL121: Problem Solving using C as Computer Science MAJOR** Course in II semester for **B.Sc. Honours (Computer Science)** programme for the batch of students admitted in academic year 2023 – 2024.

24. It is proposed to introduce **23CSMAP121: Problem Solving using C Lab as Computer Science MAJOR** Course in II semester for **B.Sc. Honours (Computer Science)** programme for the batch of students admitted in academic year 2023 – 2024.

#### **B.Sc. Honours Mathematics / Physics / Chemistry – II Semester**

25. It is proposed to introduce **23CSMIL121: Problem Solving using C as Computer Science MINOR** course in II semester for **B.Sc. Honours (Mathematics, Physics, Chemistry)** programmes for the batch of students admitted in academic year 2023 – 2024.

26. It is proposed to introduce **23CSMIP121: Problem Solving using C Lab** as **Computer Science MINOR** course in II semester for **B.Sc. Honours (Mathematics, Physics, Chemistry)** programmes for the batch of students admitted in academic year 2023 – 2024.

#### **B.Com Honours Computer Applications – II Semester**

27. It is proposed to introduce **23CAMAL121: Office Automation Tools** as **Computer Applications MAJOR** course in II semester for **B.Com. Honours (Computer Applications)** programme for the batch of students admitted in academic year 2023 – 2024.

28. It is proposed to introduce **23CAMAP121: Office Automation Tools Lab** as **Computer Applications MAJOR** course in II semester for **B.Sc. Honours (Computer Applications)** programme for the batch of students admitted in academic year 2023 – 2024.

29. It is proposed to introduce **23ITMIL121: Problem Solving in C** as **Information Technology MINOR** course in II semester for **B.Com. Honours (Computer Applications)** programmes for the batch of students admitted in academic year 2023 – 2024.

30. It is proposed to introduce **23ITMIL121: Problem Solving in C Lab** as **Information Technology MINOR** course in II semester for **B.Com. Honours (Computer Applications)** programmes for the batch of students admitted in academic year 2023 – 2024.

#### **B.C.A. Honours – II Semester**

31. It is proposed to introduce **23BCMAL121: Office Automation Tools** as **Computer Applications MAJOR** course in II semester for **B.C.A. Honours** programme for the batch of students admitted in academic year 2023 – 2024.

32. It is proposed to introduce **23BCMAL121: Office Automation Tools LAB** as **Computer Applications MAJOR** course in II semester for **B.C.A. Honours** programme for the batch of students admitted in academic year 2023 – 2024.

33. It is proposed to introduce **23BCMAL122: Programming in C** as **Computer Applications MAJOR** course in II semester for **B.C.A. Honours** programme for the batch of students admitted in academic year 2023 – 2024.

34. It is proposed to introduce **23BCMAL122: Programming in C LAB** as **Computer Applications MAJOR** course in II semester for **B.C.A. Honours** programme for the batch of students admitted in academic year 2023 – 2024.

35. It is proposed to introduce **23DSMIL121: Python Programming** as **Data Science MINOR** course in II semester for **B.Sc. Honours Computer Science** programme for the batch of students admitted in academic year 2023 – 2024.

36. It is proposed to introduce **23DSMIP121: Python Programming Lab** as **Data Science MINOR** course in II semester for **B.Sc. Honours Computer Science** programme for the batch of students admitted in academic year 2023 – 2024.

37. It is resolved to continue the teaching and evaluation methods to be followed under Autonomous status.

38. It is resolved to continue the panel of paper setters and examiners to the controller of the examinations of autonomous courses of AG & SG Siddhartha Degree College of Arts & Science College, Vuyyuru.

**Teaching methods:**

Besides the conventional methods of teaching, we use modern technology i.e. using of LMS and LCD projector to display on power board etc. for better understanding of concepts. Evaluation of a student is done by two components in the Valuation and Assessment of a student – Internal Assessment (IA) Semester Examinations (SE).

**For the Batch of Students Admitted from 2023-24. (II Semester):**

The maximum mark for IA is 30 and SE is 70 for theory; and for practical marks for IA 15 and 35 Marks for External Exam.

▪ **Internal Assessment (IA):**

Each IA written examination is of 1 hour 30 minutes duration for 30 marks. The tests will be conducted centrally. The average of two such IA is calculated for 20 marks. Attendance will be for 5 Marks. The other innovative component is for 5 marks, conducted during the class hours by the staff member/ in charge of the subject, in the form of assignments / quiz / seminars / PPT / Online- assignments / Open Book / Viva Voce / Group work / Mini Project/ Exhibition, etc. The topic and time for submission/ presentation will be announced by the staff member/ in charge of the subject in advance. Each student should explain and defend his/her presentation.

▪ **Semester Examinations (SE).**

The semester examination will be of 3 hours with maximum 70 marks. A student should register himself/herself to appear for the Semester Examinations by payment of the prescribed fee. The Semester Examinations will be in the form of a comprehensive examination covering the entire syllabus in each subject. It will be of 3 hours duration, If a candidate fails to obtain pass marks even after the due to less mark in the IA examination, the marks of the next examination will be converted to be out of 100. Even though the candidate is absent for two IA exams/obtain zero marks the external marks are considered (if he/she gets 40/100) and the result shall be declared as 'PASS'. The maximum marks for each Paper shall be 100.

**For the Batch of Students Admitted from 2022-23. (IV Semester):**

The maximum mark for IA is 30 and SE is 70 for theory; and for practical marks for IA 10 and 40 Marks for External Exam.

▪ **Internal Assessment (IA)**

Each IA written examination is of 1 hour 30 minutes duration for 20 marks. The tests will be conducted centrally. The average of two such IA is calculated for 20 marks. Attendance will be for 5 Marks. The other innovative component is for 5 marks, conducted during the class hours by the staff member/ in charge of the subject, in the form of assignments/ quiz/ seminars /PPT/Online- assignments/Open Book/Viva Voce/ Group work/ Mini Project/ Exhibition, etc. The topic and time for submission/ presentation will be announced by the staff member/ in charge of the subject in advance. Each student should explain and defend his/her presentation.

▪ **Semester Examinations (SE)**

The semester examination will be of 3 hours with maximum 70 marks. A student should register himself/herself to appear for the Semester Examinations by payment of the prescribed fee. The Semester Examinations will be in the form of a comprehensive examination covering the entire syllabus in each subject. It will be of 3 hours duration & Foundation course 2 hours irrespective of the number of credits allotted to it. If a candidate fails to obtain pass marks even after the due to less mark in the IA examination, the marks of the next examination will be converted to be out of 100. Even though the candidate is absent for two IA exams/obtain zero marks the external marks are considered (if he/she gets 40/100) and the result shall be declared as 'PASS'. The maximum marks for each Paper shall be 100.

**For the Batch of Students Admitted from 2021-22. (VI Semester)**

The maximum mark for IA is 25 and SE is 75 for theory; and for practical marks for IA 10 and 40 Marks for External Exam.

▪ **Internal Assessment (IA):**

Each IA written examination is of 1 hour duration for 15 marks. The tests will be conducted centrally. The average of two such IA is calculated for 15 marks. Other Innovative Components will be for 5 Marks. The innovative component is for 5 marks, conducted during the class hours by the staff member/ in charge of the subject, in the form of assignments/ quiz/ seminars /PPT/Online- assignments/Open Book/Viva Voce/ Group work/ Mini Project/ Exhibition, etc. The topic and time for submission/ presentation will be announced by the staff member/ in charge of the subject in advance. Each student should explain and defend his/her presentation. The semester examination will be of 3 hours with maximum 75 marks.

▪ **Semester Examinations (SE)**

A student should register himself/herself to appear for the Semester Examinations by payment of the prescribed fee. The Semester Examinations will be in the form of a comprehensive examination covering the entire syllabus in each subject. It will be of 3 hours duration & Foundation course 2 hours irrespective of the number of credits allotted to it. If a candidate fails to obtain pass marks even after the due to less mark in the IA examination, the marks of the next examination will be converted to be out of 100. Even though the candidate is absent for two IA exams/obtain zero marks the external marks are considered (if he/she gets 40/100) and the result shall be declared as 'PASS'. The maximum marks for each Paper shall be 100.

▪ **Question paper guidelines for Practical Examinations at the end of Semesters IV & VI:**

○ Two Practical Programs to be conducted out of 15 programs at the end of Semester IV & VI Practical Examinations, time 3Hrs and Maximum Marks 50, Scheme of valuation Semesters – IV & VI B.Sc. & B.Com.(C.A), B.Com.(E- Commerce-Computers).

○ Computer Science Practical's - External (Time: 3 hrs.) Total Marks: 40M

1. Programs writing (2) : 20 marks,
  2. Viva voice : 5 marks
  3. Execution &Result : 15 marks
- Total Marks: 40 marks

○ Computer Science Practical's- Internal Total Marks: 10 M

1. Record : 10 marks

- Question paper guidelines for Practical Examinations at the end of Semesters II:
  - Two Practical Programs to be conducted out of 15 programs at the end of Semester II Practical Examinations, time 3Hrs and Maximum Marks 50, Scheme of valuation for Semesters – II of B.Sc Honours Computer Science, B.Com Honours Computer Applications, B.C.A. Honours.
  - Computer Science Practical's - External (Time: 3 hrs.) Total Marks: 35M
    - 1. Experiment1 : 10 Marks
    - 2. Experiment2 : 15 Marks
    - 3. Viva voice : 10 Marks
  - Computer Science Practical's- Internal Total Marks: 15 M
    - 1. Experiment : 10 Marks
    - 2. Record : 5 Marks
- 39. Discussed and recommended for organizing Seminars, Guest lectures, Work-shops to upgrade the knowledge of students, for the approval of the Academic Council.
- 40. Discussed and empowered the HOD to suggest the panel of the paper setters and examiners to the controller of the examinations.
- 41. Suggestions

... Chairman



Class : B.Sc (MPCs, MCCs, MSCs)

Programme Educational Objectives (PEOs)

- PEO1 Professional Competence:** To equip students with a solid foundation in the principles and practices of their respective fields, enabling them to apply mathematical, scientific, and computational concepts effectively to solve complex problems.
- PEO2 Critical Thinking and Analytical Skills:** To foster the development of critical thinking, analytical reasoning, and problem-solving abilities among students, enabling them to assess, analyze, and synthesize information from diverse sources.
- PEO3 Research and Innovation:** To cultivate a spirit of inquiry and innovation among students, encouraging them to engage in research activities, explore new ideas, and contribute to the advancement of knowledge in their disciplines.
- PEO4 Effective Communication:** To develop effective communication skills, both oral and written, enabling students to articulate ideas, present findings, and collaborate with peers and professionals in interdisciplinary settings
- PEO5 Life-long Learning:** To promote life-long learning habits and the pursuit of continuous self-improvement, empowering students to adapt to evolving technologies, methodologies, and societal needs throughout their careers.
- PEO6 Global Perspective:** To cultivate a global perspective among students, fostering an understanding of the interconnectedness of scientific, technological, and societal issues, and preparing them to address global challenges with sensitivity and cultural awareness.

Programme Specific Outcomes (PSOs):

- PSO1 Mathematical Proficiency in Physical Sciences:** Apply advanced mathematical concepts such as calculus, differential equations, and linear algebra to solve problems in physics and chemistry.
- PSO2 Understanding of Physical Phenomena:** Demonstrate a deep understanding of fundamental principles in classical and modern physics, and their application in explaining natural phenomena.
- PSO3 Chemical Analysis and Synthesis Skills:** Proficiently analyze chemical compounds, understand chemical reactions, and apply principles of synthesis and characterization.
- PSO4 Statistical Computing and Data Visualization:** Utilize statistical computing software and tools to perform data analysis, visualization, and hypothesis testing, and communicate results effectively.
- PSO5 Algorithm Design and Analysis:** Design and analyze algorithms for solving computational problems, with applications in computer science and computational chemistry.
- PSO6 Software Development Proficiency:** Develop proficiency in software development, programming languages, and software engineering principles for building computational tools and applications in chemistry and related fields.

### **Programme Outcomes (POs)**

- PO1 Mathematical Proficiency:** Demonstrate proficiency in mathematical concepts, including calculus, algebra, differential equations, and discrete mathematics, and apply them to analyze and solve problems in various domains.
- PO2 Scientific Knowledge:** Acquire a deep understanding of the fundamental principles and theories in physics, chemistry, computer science, and other related disciplines, and apply this knowledge to explain natural phenomena and technological processes.
- PO3 Experimental and Analytical Skills:** Develop proficiency in experimental techniques, laboratory procedures, and data analysis methods, and apply them to design, conduct, and interpret experiments in physics, chemistry, and related fields.
- PO4 Computational Competence:** Develop proficiency in programming languages, algorithms, and software tools, and apply computational methods to model, simulate, and analyze complex systems and phenomena in science and engineering.
- PO5 Problem-solving Abilities:** Demonstrate the ability to identify, formulate, and solve scientific and mathematical problems using appropriate methodologies, critical thinking, and analytical reasoning skills.
- PO6 Research and Innovation Skills:** Demonstrate the ability to conduct independent research, explore new ideas, and contribute to the advancement of knowledge in their respective fields through scholarly activities, projects, or internships.
- PO7 Career Preparedness:** To prepare students for diverse career paths in academia, industry, research, and public sectors, equipping them with the necessary skills, knowledge, and attitudes to succeed in their chosen fields.

Class : **B.Com (Computer Applications, E-Commerce-Computers)**

**Programme Educational Objectives (PEOs)**

- PEO1 Proficiency in Computer Applications:** Equip students with a strong foundation in computer applications, programming languages, and software tools relevant to commerce and business management.
- PEO2 Understanding of E-Commerce Principles:** Provide students with a comprehensive understanding of e-commerce concepts, including online transactions, electronic marketing, e-payment systems, and digital business models.
- PEO3 Integration of Technology in Business Operations:** Enable students to apply technology effectively to streamline business operations, enhance productivity, and optimize processes in various functional areas such as finance, marketing, and logistics.
- PEO4 Development of Analytical and Problem-Solving Skills:** Cultivate analytical thinking, problem-solving abilities, and decision-making skills among students, enabling them to analyze business challenges, identify opportunities, and propose effective solutions using computer-based tools and techniques.
- PEO5 Digital Marketing and E-Business Strategies:** Familiarize students with digital marketing strategies, social media management, search engine optimization (SEO), and other techniques to promote e-commerce ventures and enhance online visibility and customer engagement.
- PEO6 Entrepreneurial Mindset and Innovation:** Foster an entrepreneurial mindset among students, encouraging creativity, innovation, and risk-taking in the development of digital business ideas, startups, and entrepreneurial ventures.

**Programme Specific Outcomes (PSOs):**

- PSO1 E-Commerce Platform Development:** Design, develop, and maintain e-commerce websites and platforms using programming languages, web development frameworks, and content management systems to facilitate online transactions and customer interactions.
- PSO2 Digital Marketing Proficiency:** Apply digital marketing strategies, tools, and techniques to promote products and services, enhance brand visibility, attract website traffic, and drive conversions in the context of e-commerce businesses.
- PSO3 Financial Analysis and Management:** Utilize computer-based financial analysis tools and techniques to analyze financial data, interpret financial statements, assess business performance, and make informed financial decisions in e-commerce enterprises.
- PSO4 Data Analytics for Business Insights:** Apply data analytics techniques and business intelligence tools to analyze large datasets, extract meaningful insights, identify trends, and support data-driven decision-making processes in e-commerce and digital business.
- PSO5 Customer Relationship Management (CRM):** Implement CRM systems and strategies to manage customer relationships, track customer interactions, personalize marketing campaigns, and enhance customer satisfaction and loyalty in e-commerce settings.

**PSO6 E-Business Strategy Development:** Develop e-business strategies, business models, and plans for launching, scaling, and managing e-commerce ventures, considering market trends, competitive analysis, and customer needs.

**PSO7 Effective Communication and Collaboration:** Communicate effectively with stakeholders, team members, and clients through various communication channels, including email, presentations, reports, and online collaboration platforms, fostering teamwork and collaboration in e-commerce projects.

### **Programme Outcomes (POs)**

**PO1 Data Management and Analysis:** Graduates will possess the skills to manage and analyze data effectively using database management systems, spreadsheet applications, and statistical software to support decision-making in e-commerce businesses.

**PO2 Digital Marketing Competence:** Graduates will understand digital marketing principles and strategies and be capable of leveraging digital marketing tools and techniques to promote products/services and enhance brand visibility in e-commerce environments.

**PO3 Financial Management Proficiency:** Graduates will demonstrate competence in financial management, including understanding financial statements, analyzing financial data, and making financial decisions using computer-based tools and software.

**PO4 E-Commerce Security and Privacy Knowledge:** Graduates will understand the importance of security and privacy in e-commerce transactions and possess the knowledge to implement security measures and privacy protection mechanisms to safeguard customer data and transactions.

**PO5 Customer Relationship Management (CRM):** Graduates will have the ability to implement and manage CRM systems effectively to maintain and enhance customer relationships, track customer interactions, and improve customer satisfaction and retention.

**PO6 Entrepreneurial Mindset and Innovation:** Graduates will develop an entrepreneurial mindset, creativity, and innovation skills to identify business opportunities, develop new e-commerce ventures, and drive innovation in the digital business landscape.

**PO7 Project Management Abilities:** Graduates will possess project management skills to plan, execute, and control e-commerce projects effectively, ensuring timely delivery, quality, and stakeholder satisfaction.

Class : B.Sc Honours Computer Science

Programme Educational Objectives (PEOs)

- PEO1 Career Preparation:** Prepare students for diverse career paths in computer science and related fields such as software development, data science, cyber security, and artificial intelligence.
- PEO2 Technical Competence:** Equip students with a strong theoretical and practical understanding of core computer science concepts, algorithms, data structures, programming languages, and software development methodologies.
- PEO3 Problem-solving Skills:** Develop students' analytical and problem-solving skills, enabling them to tackle complex computational problems, design efficient algorithms, and develop innovative solutions using computational techniques.
- PEO4 Adaptability to Technology Changes:** Prepare students to adapt to rapidly evolving technologies and paradigms in the field of computer science, enabling them to stay abreast of emerging trends, tools, and methodologies throughout their careers.
- PEO5 Effective Communication and Collaboration:** Develop students' communication and collaboration skills, enabling them to effectively convey technical concepts, work collaboratively in multidisciplinary teams, and interact professionally with clients, stakeholders, and peers.

Programme Specific Outcomes (PSOs)

- PSO1 Problem Solving Skills:** Graduates will be able to analyze, design, and develop software solutions for complex problems using appropriate algorithms, data structures, and programming languages.
- PSO2 Software Development Proficiency:** Graduates will demonstrate proficiency in software development methodologies, tools, and techniques to design, implement, and test software systems that meet specified requirements.
- PSO3 System Design and Implementation:** Graduates will be capable of designing and implementing computer-based systems, including software applications, databases, and network solutions, adhering to industry best practices and standards.
- PSO4 Information Management:** Graduates will possess the skills to effectively manage and manipulate large volumes of data, including data retrieval, storage, processing, and analysis, using relevant database management systems and technologies.
- PSO5 Networking and Security Competence:** Graduates will have a thorough understanding of computer networks, protocols, and security mechanisms, enabling them to design, configure, and administer secure network infrastructures and systems.
- PSO6 Critical Thinking and Innovation:** Graduates will demonstrate the ability to critically evaluate existing technologies, propose innovative solutions, and adapt to emerging trends and advancements in the field of computer science.
- PSO7 Communication and Collaboration:** Graduates will be able to communicate technical concepts effectively, and collaborate efficiently in multidisciplinary teams to solve complex problems and deliver quality software solutions.

### **Programme Outcomes (POs)**

- PO1 Algorithmic Proficiency:** Graduates will demonstrate mastery in algorithm design and analysis, enabling them to develop efficient solutions for a wide range of computational problems.
- PO2 Data Structures Mastery:** Graduates will possess a deep understanding of data structures and their applications, allowing them to efficiently organize, manipulate, and retrieve data in various computational scenarios.
- PO3 System Architecture Knowledge:** Graduates will have a comprehensive knowledge of computer architecture and operating systems, enabling them to understand and optimize system performance and resource utilization.
- PO4 Knowledge Base:** Graduates will demonstrate a comprehensive understanding of the fundamental principles, theories, and concepts in computer science, including algorithms, data structures, programming languages, software engineering, computer architecture, and operating systems.
- PO5 Web Development Proficiency:** Graduates will possess the skills to design and develop dynamic and interactive web applications, leveraging web development technologies and frameworks effectively.
- PO6 Ethical and Professional Conduct:** Graduates will adhere to ethical standards and professional integrity in their practice, demonstrating awareness of ethical issues related to computing, and complying with legal and regulatory requirements in their professional activities.
- PO7 Lifelong Learning and Professional Development:** Graduates will demonstrate a commitment to continuous learning and professional development, engaging in self-directed learning, acquiring new skills, and staying abreast of advancements in technology and computing.

**Class :** **B.Com Honours Computer Applications**

**Programme Educational Objectives (PEOs)**

- PEO1 Career Preparation:** To prepare graduates for successful careers in the field of commerce and business, with a strong emphasis on utilizing computer applications and technology to analyze financial data, manage business processes, and make informed decisions.
- PEO2 Technical Competence:** To equip graduates with the necessary knowledge, skills, and proficiency in computer applications, software tools, and information systems relevant to the field of commerce, enabling them to effectively leverage technology for business operations and decision-making.
- PEO3 Analytical Skills:** To develop graduates' analytical abilities, enabling them to interpret financial data, analyze market trends, and evaluate business performance using computational tools, statistical techniques, and financial models.
- PEO4 Communication and Collaboration:** To enhance graduates' communication skills and collaborative abilities, enabling them to effectively communicate financial information, collaborate with cross-functional teams, and engage in professional discourse within the business context.
- PEO5 Problem-Solving Abilities:** To foster graduates' problem-solving skills, enabling them to identify business challenges, propose innovative solutions, and implement appropriate computer-based strategies to optimize business processes, improve efficiency, and achieve organizational goals.
- PEO6 Ethical and Social Responsibility:** To instill ethical values and social responsibility in graduates, empowering them to recognize and address ethical dilemmas in business practices, adhere to professional codes of conduct, and contribute positively to the welfare of society.

**Programme Specific Outcomes (PSOs)**

- PSO1 Entrepreneurial Mindset:** To cultivate an entrepreneurial mindset among graduates, enabling them to identify business opportunities, innovate solutions, and leverage technology to establish and manage successful ventures in the dynamic business environment.
- PSO2 Continuous Learning and Adaptation:** To promote a commitment to lifelong learning and professional development among graduates, enabling them to adapt to evolving technologies, industry trends, and regulatory changes in the field of commerce and computer applications.
- PSO3 Proficiency in Computer Applications:** Graduates will demonstrate proficiency in using a wide range of computer applications, including accounting software, spreadsheet tools, database management systems, and enterprise resource planning (ERP) systems, to support various business functions.
- PSO4 Data Analysis and Interpretation:** Graduates will be able to collect, analyze, and interpret financial and business data using computer-based tools and techniques, enabling them to make informed decisions and recommendations to enhance organizational performance.

**PSO5 Financial Management Skills:** Graduates will possess a strong understanding of financial management principles and practices, coupled with the ability to apply computational methods and financial modeling techniques to analyze financial statements, assess risks, and optimize investment strategies.

**PSO6 Business Process Automation:** Graduates will be capable of designing and implementing computer-based solutions to automate routine business processes, streamline workflows, and enhance operational efficiency across different functional areas of an organization.

**PSO7 E-commerce and Digital Marketing:** Graduates will have a sound knowledge of e-commerce platforms, online marketing strategies, and digital payment systems, enabling them to leverage technology for selling products and services, reaching target audiences, and managing online transactions.

### **Programme Outcomes (POs)**

**PO1 Information Security and Risk Management:** Graduates will demonstrate awareness of information security threats and vulnerabilities in the digital business environment, and possess the skills to implement security measures, mitigate risks, and ensure the confidentiality, integrity, and availability of business data.

**PO2 Business Intelligence and Decision Support:** Graduates will be able to utilize business intelligence tools and data analytics techniques to extract meaningful insights from large datasets, generate reports, and develop dashboards for facilitating data-driven decision-making at strategic and operational levels.

**PO3 Project Management Proficiency:** Graduates will be proficient in project management methodologies and tools, enabling them to plan, execute, and monitor business projects involving technology implementation, software development, or process improvement initiatives.

**PO4 Effective Communication and Presentation:** Graduates will possess strong communication skills, both oral and written, allowing them to communicate financial information, project proposals, and business recommendations effectively to stakeholders within and outside the organization.

**PO5 Ethical and Legal Compliance:** Graduates will adhere to ethical standards and legal regulations governing business practices, including those related to data privacy, intellectual property rights, and financial reporting, ensuring compliance and integrity in all business activities.

**PO6 Domain Knowledge:** Graduates will demonstrate a strong understanding of fundamental concepts in commerce, including accounting, finance, business law, and management principles, coupled with proficiency in computer applications and information technology.

**PO7 Computer Application Skills:** Graduates will possess the skills to effectively use computer applications and software tools for various business functions, including accounting, financial analysis, data management, and decision support, to enhance organizational efficiency and productivity.



**Class :** **B.C.A. Honours**

**Programme Educational Objectives (PEOs)**

- PEO1 Technical Competence:** To equip graduates with a strong foundation in computer science principles, theories, and practical skills necessary for software development, database management, networking, and other areas of computing.
- PEO2 Software Development Proficiency:** To prepare graduates with the ability to design, develop, and deploy software solutions using various programming languages, development tools, and methodologies, meeting the needs of diverse industries and domains.
- PEO3 Problem-Solving Skills:** To cultivate graduates' analytical and problem-solving abilities, enabling them to analyze complex problems, develop algorithms, and implement effective solutions using computational techniques and software engineering practices.
- PEO4 Collaborative and Interpersonal Skills:** To develop graduates' communication, teamwork, and interpersonal skills, enabling them to collaborate effectively in multidisciplinary teams, communicate technical concepts to diverse audiences, and work professionally in real-world environments.
- PEO5 Professional Development:** To foster graduates' professional growth and adaptability by providing opportunities for continuous learning, skill enhancement, and exposure to emerging technologies, industry trends, and best practices in the field of computer applications.
- PEO6 Ethical and Social Responsibility:** To instill ethical values, social responsibility, and awareness of the societal impact of technology in graduates, empowering them to make ethically informed decisions, respect privacy and confidentiality, and contribute positively to the welfare of society.

**Programme Specific Outcomes (PSOs)**

- PSO1 Programming Proficiency:** Graduates will demonstrate proficiency in various programming languages, including but not limited to C, C++, Java, Python, or others, and the ability to apply programming concepts to solve real-world problems effectively.
- PSO2 Software Development Skills:** Graduates will possess the skills to design, develop, and deploy software applications across different platforms, utilizing software engineering principles, development frameworks, and version control systems.
- PSO3 Database Management Competence:** Graduates will be proficient in designing and managing databases, including data modeling, querying, manipulation, normalization, and optimization using database management systems (DBMS) such as MySQL, Oracle, or SQL Server.
- PSO4 Entrepreneurial Mindset:** To cultivate an entrepreneurial mindset among graduates, encouraging them to identify opportunities, and leverage technology for creating value, starting ventures, and contributing to economic growth and innovation.
- PSO5 Global Perspective:** To equip graduates with a global perspective and cross-cultural competency, enabling them to work effectively in multicultural environments, adapt to diverse business practices, and collaborate with teams across geographical boundaries.

**PSO6 Leadership and Management Skills:** To develop leadership qualities and management skills in graduates, enabling them to lead teams, manage projects, and navigate organizational dynamics effectively in roles such as project managers, team leaders, or technology consultants.

**PSO7 Career Advancement:** To prepare graduates for successful careers and professional advancement in the field of computer applications, including opportunities for higher education, specialized certifications, and lifelong learning to stay updated with evolving technologies and industry requirements.

### **Programme Outcomes (POs)**

**PO1 Web Development Expertise:** Graduates will have expertise in web development technologies and frameworks, enabling them to design and implement dynamic and interactive web applications using HTML, CSS, JavaScript, and server-side scripting languages like PHP, ASP.NET, or Node.js.

**PO2 Networking and Security Knowledge:** Graduates will demonstrate understanding of computer networks, network protocols, and security mechanisms, and possess the skills to configure, administer, and secure network infrastructures and systems.

**PO3 System Administration Skills:** Graduates will be capable of performing system administration tasks, including installation, configuration, maintenance, and troubleshooting of operating systems, servers, and system software in both standalone and networked environments.

**PO4 Mobile Application Development:** Graduates will have knowledge and skills in mobile application development, including designing and developing mobile apps for Android and iOS platforms using relevant programming languages and development frameworks.

**PO5 Data Analytics and Visualization:** Graduates will be able to analyze and visualize data using statistical techniques, data mining algorithms, and visualization tools to extract insights, identify patterns, and support decision-making processes.

**PO6 Project Management Abilities:** Graduates will demonstrate project management skills, including project planning, scheduling, resource allocation, risk management, and project documentation, to successfully manage software development projects from inception to completion.

**PO7 Communication and Presentation Skills:** Graduates will possess effective communication and presentation skills, enabling them to articulate technical concepts clearly, document software requirements, and present project proposals or solutions to stakeholders professionally.

### Course Structure

**Class** : **B.Sc. (MPCs, MCCs, MSCs)**

**Semester** : **VI**

<b>S. No</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Teaching Hours per week</b>	<b>IA</b>	<b>SEE</b>	<b>Total Marks</b>	<b>Credits</b>
1	SECCSCT01	WEB INTERFACE DESIGNING TECHNOLOGIES	3	25	75	100	3
2	SECCSCP01	WEB INTERFACE DESIGNING TECHNOLOGIES LAB	3	10	40	50	2
3	SECCSCT02	WEB APPLICATIONS DEVELOPMENT USING PHP AND MYSQL	3	25	75	100	3
4	SECCSCP02	WEB APPLICATIONS DEVELOPMENT USING PHP AND MYSQL LAB	3	10	40	50	2



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**WEB INTERFACE DESIGNING TECHNOLOGIES**  
**Offered to III B.Sc. (MPCs / MCCs / MSCs) – VI Semester**

Course Code	: SECCSCT01	No. Of Lecture Hours per week	: 3
Year of Introduction	: 2022-23	Total No. Of Lecture Hours	: 60
Year of Offering	: 2023-24	CIA Marks	: 25
Year of Revision	: NIL	SEE Marks	: 75
Percentage of Revision	: 0%	Total Marks	: 100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 3

**Course Objective:**

- ❖ To create web elements like buttons, banners & Bars and of course complete UI designs.
- ❖ Forms and validations for your website.
- ❖ Setting up page layout, color schemes, contract, and typography in the designs.
- ❖ Writing valid and concise code for web pages.

**Course Outcomes:**

- ❖ CO1: Understand web application and static web page using Html. (PO5)
- ❖ CO2: Gain knowledge about various designing of style sheets. (PO5)
- ❖ CO3: Demonstrate skills regarding creation of an interface to dynamic website.(PO7)
- ❖ CO4: Gain knowledge about various advantages of XML and validating schema(PO5)
- ❖ CO5: Learn how to install word press and gain the knowledge of installing various plugins to use in their websites. (PO5, PO7)

**Syllabus:**

Unit	Learning Units	Lecture Hours
	<b>Web Designing, HTML</b>	
I	<b>Web Designing:</b> Introduction To Web Designing, Difference Between Web Applications And Desktop Applications. <b>HTML:</b> Introduction To HTML, Introduction To HTML, Headings, Paragraphs Styles & Colors, HTML Formatting, Quotations, Comments, Hyperlinks, Lists, Using colors and images, Tables, Multimedia Objects - Video, Audio, Plugins, YouTube, Frames, Forms	12 Hours
	<b>CSS, HTML API'S</b>	
II	<b>CSS :</b> Introduction, Using Styles, Simple Examples, Defining Your Own Styles, Properties and Values in Styles, Style Sheets, Formatting blocks of information, Layers, CSS Combinators, Pseudo Class, Pseudo Elements, Opacity, ToolTips, Image Gallery, CSS Forms, CSS Counters, CSS Responsive. <b>HTML API'S:</b> Geo location, Drag/drop, local storage, HTML SSE	12 Hours

III	<p><b>Client side Validation:</b> Introduction to JavaScript: What Is DHTML, JavaScript Basics, Variables, String Manipulations, Mathematical Functions, Statements, Operators, Arrays, functions</p> <p><b>Objects in JavaScript:</b> Data and Objects In JavaScript, Regular Expressions, Exception Handling.</p> <p><b>DHTML with JavaScript :</b>Data Validation, Opening a New Window, Messages and Confirmations, The Status Bar, Different Frames, Rollover Buttons, Moving Images</p>	14 Hours
IV	<p><b>XML:</b> Introduction to xml, How to write a xml document, Elements and attributes ,Comments in xml, Namespace in xml, Xml css, Advantages of xml, Uses of xml, xml schema, data types, simple types, complex types, Validating DTD, XSD.</p>	12 Hours
V	<p><b>Word press:</b> Introduction to word press, servers like wamp, bitnami e.tc, installing and configuring word press, understanding admin panel, working with posts and pages, using editor, text formatting with shortcuts, working with media-Adding, editing, deleting media elements, working with widgets, menus.</p>	10 Hours

**Text Book / references / e-books / websites:**

1. Chris Bates ,Web Programming Building Internet Applications ,Second Edition ,Wiley
2. Web technologies by A.A.Puntambekar
3. Web Technologies by N.P.Gopalan,Eastern Economy Edition, 2<sup>nd</sup> edition
4. PaulS.Wang Sanda S.Katila, an Introduction to Web Design plus Programming ,Thomson
5. Head First HTML and CSS, Elisabeth Robson, Eric Freeman, O'Reilly MediaInc.
6. An Introduction to HTML and Java Script :for Scientists and Engineers, David R. Brooks
7. Schaum's Easy Outline HTML, David Mercer , Mcgraw Hill Professional.
8. Word press for Beginners, Dr.Andy Williams.
9. Professional wordpress, Brad Williams, Daviddamstra, Hanstern.

**Web resources:**

- <http://www.codecademy.com/tracks/web>
- <http://www.w3schools.com>
- <https://www.w3schools.in/wordpress-tutorial/d><http://www.homeandlearn.co.uk>

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COMPUTER SCIENCE      SECCSCT01      2023-24      B.SC(MPCS,MCCS, MSCS)  
SEMESTER–VI                      PAPER–VI                      Max. Marks: 75

Model Paper: WEB INTERFACE DESIGNING TECHNOLOGIES

No of Hours: 3

No of Credits: 3

Pass Marks 30

**SECTION A: Short Answer Questions (25 Marks: 5 x 5)**

*Answer any Five questions. (At least 1 question should be given from each Unit)*

1. What is HTML? Explain features and structure of HTML program with example(CO1,L1)
2. What is layer? How are they described with HTML code?(CO1,L1)
3. Explain hyperlinks in HTML.(CO2,L5)
4. What is java script? Explain the features ,advantages and disadvantages of java script (CO3,L1)
5. Explain the moving images with java script(CO3,L5)
6. What are the elements and attributes used in XML(CO4,L1)
7. Define and explain namespace in XML(CO4,L1)
8. Explain text formatting in word Press.(CO5,L5)

**SECTION B (Total: 5 x 10 = 50 Marks)**

*Answer all questions. (Two questions should be given from each unit with internal choice)*

9(a) What is list? Explain various types of lists in HTML.(CO1,L1)

OR

9(b) Explain Frames and forms in HTML(CO1,L2)

10(a) Define CSS, Explain various styles sheets in HTML(CO2,L1)

OR

10(b) Explain HTML APIs.(CO1,L2)

11(a) What is DHTML? Explain about various string and mathematical functions(CO3,L2)

OR

11(b) Explain Exception handling and rollover buttons in java script(CO3,L2)

12(a) What are the advantages of using XML and CSS? How to validate XML schema.(CO4,L1)

OR

12(b) Explain about DTD in XML(CO4,L2)

13(a) What is admin panel, what are the steps involved in working with post and pages (CO5,L1)

OR

13(b) Explain how we can add, edit and deleting media elements in wordpress (CO5,L2)

**WEB INTERFACE DESIGNING TECHNOLOGIES LAB**  
**Offered to III B.Sc. (MPCs / MCCs / MSCs) – VI Semester**

<b>Course Code</b>	: <b>SECCSCP01</b>	No. Of Lecture Hours per week	: 3
Year of Introduction	: 2022-23	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 10
Year of Revision	: NIL	SEE Marks	: 40
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

**Course Outcomes:**

Students at the successful completion of the course will be able to:

- ❖ CO1: Create a basic website with the help of HTML and CSS. (PO5)
- ❖ CO2: Acquire the skill of installing word press and various plugins of Word press. (PO5)
- ❖ CO3: Create a static website with the help of Word press. (PO5,PO7)
- ❖ CO4: Create an interface for a dynamic website. (PO5,PO7)
- ❖ CO5: Apply various themes for their websites using Word press. (PO7)

**Practical Syllabus:**

**HTML and CSS:**

1. Create an HTML document with the following formatting options:
  - (a) Bold,
  - (b) Italics,
  - (c) Underline,
  - (d) Headings (Using H1 to H6 heading styles),
  - (e) Font (Type, Size and Color),
  - (f) Background (Colored background / Image in background),
  - (g) Paragraph,
  - (h) Line Break,
  - (i) Horizontal Rule,
  - (j) Pre tag
2. Create an HTML document which consists of:
  - (a) Ordered List
  - (b) Unordered List
  - (c) Nested List
  - (d) Image
3. Create a form using HTML which has the following types of controls:
  - (a) Text Box
  - (b) Option / radio buttons
  - (c) Check boxes
  - (d) Reset and Submit buttons
4. Embed a calendar object in your webpage.
5. Create an applet that accepts two numbers and perform all the arithmetic operations on them.
6. Create nested table to store your curriculum with image.

7. Create a form that accepts the information from the subscriber of a mailing system.
8. Create a help file as follows:



9. Write an html program including style sheets.
10. Write an html program to layers of information in webpage.
11. Develop a Java script to determine whether the given number is a “PERFECT NUMBER” or not.
12. Develop a Java script to generate “ARMSTRONG NUMBERS” between the ranges 1 to 100.
13. Write a java script that reads an integer and displays whether it is a prime number or not.
14. Write a java script which accepts the text in lowercase and displays the text in uppercase
15. Write a java script program for username and password validation using on click event

### **Word press:**

16. Installation and configuration of word press.
17. Create five pages on COVID– 19 and link them to the homepage.
18. Add an external video link with size 640X360.
19. Create a user and assign a role to him.
20. Create a login page to word press using custom links

### **Lab References:**

- ❖ Web technologies by A.A.Puntam bekar
- ❖ Web Technologies by N.P.Gopalan ,Eastern Economy Edition,2nd edition
- ❖ Wordpress for Beginners, Dr.Andy Williams.
- ❖ Professional word press, Brad Williams, Daviddamstra,Hanstern.

### **Reference Materials on the Web/weblinks:**

1. [https://onlinecourses.nptel.ac.in/noc17\\_cs22/course](https://onlinecourses.nptel.ac.in/noc17_cs22/course)
2. <http://www.codecademy.com/tracks/web>
3. <http://www.w3schools.com>
4. <https://www.w3schools.in/wordpress-tutorial/>





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**WEB APPLICATIONS DEVELOPMENT USING PHP AND MYSQL**

Offered to III B.Sc. (MPCs / MCCs / MSCs) – VI Semester

Course Code	: SECCSCT02	No. Of Lecture Hours per week	: 3
Year of Introduction	: 2022-23	Total No. Of Lecture Hours	: 60
Year of Offering	: 2023-24	CIA Marks	: 25
Year of Revision	: NIL	SEE Marks	: 75
Percentage of Revision	: 0%	Total Marks	: 100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 3

**Course Objective:**

Upon successful completion of the course, participants should be able to:

- ❖ List the major elements of the PHP & MySQL work and explain why PHP is good for web development.
- ❖ Learn how to take a static website and turn it into a dynamic website run from a database using PHP and MySQL.

**Course Outcomes:**

Students at the successful completion of the course will be able to:

- ❖ CO1: Learn basic structure and key concepts in PHP, Control statements and functions concept and related programs(PO5)
- ❖ CO2: Know What is an Array concept related programs, What is an Object, various objects, Formatting strings, Date and time and related programs(PO5)
- ❖ CO3: Learn importance of Forms, Combining HTML with PHP code. Importance of Cookies and Sessions related programs of forms cookies and Sessions.(PO5)
- ❖ CO4: Know importance of File concept in PHP how to Create, Open, Read and write data in file related programs, Knowing about Image creation, drawing, and modification image (PO7)
- ❖ CO5: Know about Database concept of MySQL, Connection, Creation of Database, Table adding Recording to it related programs(PO7)

**Syllabus:**

Unit	Learning Units	Lecture Hours
I	<b>The Building blocks of PHP:</b> Variables, Data types, Operators and Expressions, Constants. <b>Flow Control Functions in PHP:</b> Switching Flow, Loops, Code Blocks and Browser Output. <b>Working with Functions:</b> What is function, Calling functions, Functions, Returning the values from User-Defined functions, Variable scope.	12 Hours

II	<b>Working with Arrays:</b> What are Arrays?, Creating Arrays <b>Working with Objects:</b> Creating Objects, Object Inheritance, <b>Working with Strings:</b> Dates and Time, <b>Formatting strings with PHP:</b> Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.	12 Hours
III	<b>Working with Forms:</b> Creating Forms, Accessing Form Input with User defined Arrays, Combining HTML and PHP code on a single Page, <b>Working with Cookies and User Sessions:</b> Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session Variables	14 Hours
IV	<b>Working with Files and Directories:</b> Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from File, Writing or Appending to a File. <b>Working with Images:</b> Understanding the Image-Creation Process, Drawing a New Image, Modifying Existing Images, Image Creation from User Input.	12 Hours
V	<b>Interacting with MySQL using PHP:</b> MySQL versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data, Creating an Online Address Book, Planning and Creating Database Tables, Creating Menu, Creating Record, Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.	10 Hours

### **Text books and References**

1. Julie C. Meloni, SAMS Teach yourself PHP MySQL and Apache, Pearson education
2. Steven Holzner, PHP: The Complete Reference, Mc Graw-Hill
3. Robin Nixon, Learning PHP, MySQL ,JavaScript, CSS & HTML5 ,Third Edition O'reilly, 2014
4. Xue Bai Michael Ekedahl, The web warrior guide to Web Programming, Thomson (2006).

### **Web resources:**

1. <http://www.codecademy.com/tracks/php>
2. <http://www.w3schools.com/PHP>
3. <http://www.tutorialpoint.com>

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COMPUTER SCIENCE                      SECCSCT02                      2023-24                      B.SC(MPCS,MCCS, MSCS)  
SEMESTER-I    PAPER-VI    Max. Marks: 75

Model Paper: WEB APPLICATIONS DEVELOPMENT USING PHP AND MYSQL

No of Hours : 3

No of Credits : 3

Pass Marks 30

**SECTION A: Short Answer Questions (25 Marks: 5 x 5)**

*Answer any Five questions. (At least 1 question should be given from each Unit)*

- 1) Define Structure of PHP.(CO1,L1)
- 2) Differentiate Conditional statement and Looping statement with syntax.(CO1,L4)
- 3) Define Array concept explain about it.(CO2,L1)
- 4) Compare Array with Object creation.(CO2,L4)
- 5) Explain about Cookies concept.(CO3,L2)
- 6) Explain about Image creation.(CO4,L2)
- 7) Write short note on MySQLi.(CO5,L1)
- 8) What is use of Select query with on syntax and example?(CO5,L1)

**SECTION B**

**(Total: 5 x 10 = 50 Marks)**

*Answer all questions. (Two questions should be given from each unit with internal choice)*

9 (a) Explain about Control Statements. (CO1, L2)

OR

9 (b) Discuss about Function define, Call and return value with example. (CO1, L6)

10 (a) List various types of Formatting strings explain them. (CO2, L2)

OR

10 (b) Define Array function with example. ( CO2, L1)

11 (a) Write names of Form objects explain them with example. (CO3, L2)

OR

11 (b) Compare and Contrast Session and Cookies. (CO3, L4)

12 (a) Explain File concept about file creation, Open file, Write file and Delete file with example (CO4, L2)

OR

12(b) Construct steps for Interfacing complete image concept explain them with one example. (CO4, L3)

13 (a) Discuss about DDL commands and DML commands in MySQLi with syntaxes (CO5, L6)

OR

13 (b) Write code to Create table of Employee by adding any four columns with example. (CO5,L6)

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**WEB APPLICATIONS DEVELOPMENT USING PHP AND MYSQL LAB**  
**Offered to III B.Sc. (MPCs / MCCs / MSCs) – VI Semester**

<b>Course Code</b>	: <b>SECCSCP02</b>	No. Of Lecture Hours per week	: 3
Year of Introduction	: 2022-23	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 10
Year of Revision	: NIL	SEE Marks	: 40
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

**Course Outcomes:**

Students at the successful completion of the course will be able to:

- ❖ CO1: Learn and implement basic programs in PHP, Control statements and functions concept (PO5)
- ❖ CO2: Implement Basic programs in Object, various objects, Formatting strings, Date and time (PO5)
- ❖ CO3: Learn and implement important programs of Forms, Combining HTML with PHP code. Importance of Cookies and Sessions..(PO5)
- ❖ CO4: Implement programs on Files concept in PHP and on Image creation ,drawing ,and modification image (PO5&PO7)
- ❖ CO5: Implement Database programs on MySQLi ,Connection ,Creation of Database ,Table adding Record in to iterated programs(PO7)

**Practical Syllabus:**

1. Write a PHP program to Display “Hello”
2. Write a PHP Program to display today's date.
3. Write a PHP program to display Fibonacci series.
4. Write a PHP Program to read the employee details.
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Create student registration form using text box, check box, radio button, select, submit button.
8. Create Website Registration Form using text box, check box, radio button, select, submit button.
9. Write a PHP script to demonstrate passing variables with cookies.
10. Write a program to keep track of how many times a visitor has loaded the page.
11. Write a PHP application to add, Modify, delete and fetch the rows in a Table.
12. Develop a PHP application to implement the following Operations
  - a. Registration of Users.
  - b. Insert the details of the Users.
  - c. Modify the Details.
  - d. Transaction Maintenance.
  - e. No of times Logged in
  - f. Time Spent on each login.
  - g. Restrict the user forth retrials only.
  - h. Delete the user if he spent more than 100 Hrs of transaction.
13. Write a PHP script to connect to the MySQL server from your website.
14. Write a program to read customer information like cust-no, cust-name, item purchased, and mob-no, from customer table and display all this information in table format on the output screen.

15. Write a program to edit the name of a customer to “Kiran” with custno=1, and to delete record with cust- no=3.
16. Write a program to read employee information like emp-no, emp-name, designation and salary from the EMP table and display all this information using table format in your website.
17. Create a dynamic website using PHP and MySQL.

**Text books and References:**

- ❖ JulieC. Meloni, SAMS Teach yourself PHP MySQL and Apache, Pearson Education (2007).
- ❖ Steven Holzner, PHP: The Complete Reference ,McGraw-Hill
- ❖ Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition O'reilly.

**Web resources:**

<http://www.codecademy.com/tracks/phpb>

<http://www.w3schools.com/PHP>

### Course Structure

**Class** : **B.Com (Computer Applications & E-Commerce-Computers)**

**Semester** : **VI**

<b>S. No</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Teaching Hours per week</b>	<b>IA</b>	<b>SEE</b>	<b>Total Marks</b>	<b>Credits</b>
1	SECCAT01	Big data Analytics using R	3	25	75	100	3
2	SECCAP01	Big data Analytics using R Lab	2	10	40	50	2
3	SECCAT07	Data Science using Python	3	25	75	100	3
4	SECCAP07	Data Science using Python Lab	2	10	40	50	2



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**BIG DATA ANALYTICS USING 'R'**

**Offered to III B.Com (Computer Applications & E-Commerce-Computers) – VI Semester**

<b>Course Code</b>	: <b>SECCAT01</b>	No. Of Lecture Hours per week	:	3
Year of Introduction	: 2022-23	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	25
Year of Revision	: NIL	SEE Marks	:	75
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	3

**Course Objective:**

Big data analytics examines large amounts of data to uncover hidden patterns, correlations and other insights. With today's technology, it's possible to analyze your data and get answers from it almost immediately an effort that's slower and less efficient with more traditional business intelligence solutions.

**Course Outcomes:**

- ❖ CO1: Understand data and classification of digital data. (PO5)
- ❖ CO2: Gain knowledge of technologies used in bigdata Analytics. (PO5, PO7)
- ❖ CO3: Understand basics of R and control structures in R. (PO5)
- ❖ CO4: Load data into R objects and manipulate them as needed. (PO5)
- ❖ CO5: Create and edit visualizations with R (PO7)

**Course Focus:**

R for data science focuses on the language's statistical and graphical uses. When you learn R for data science, you'll learn how to use the language to perform statistical analyses and develop data visualizations. R's statistical functions also make it easy to clean, import and analyze data.

**Syllabus**

Unit	Learning Units	Lecture Hours
I	<b>Introduction to Big data:</b> What is data, Classification of Digital Data- Structured Unstructured, semi-structured data, Characteristics of data, Evaluation of big data, Definition and challenges of big data, what is big data and why to use big data?	12 Hours
II	<b>Big data Analytics:</b> What is and isn't big data analytics? Classification of analytics, Importance of big data analytics, Technologies needed to meet challenges of big data, data science, Data scientist	12 Hours
III	<b>Introduction to R and getting started with R:</b> What is R? Why R? Advantages of R over other programming languages, Data types in R - logical, numeric, integer, character, double, Complex, raw, coercion, ls () command, Expressions, Variables and functions, control structures, Array, Matrix, Vectors, Factors, R packages	14 Hours

IV	<b>Exploring data in R</b> – Data frames-data frame access, Ordering data frames, functions for data frames dim(), nrow(), ncol(), str(), summary(), names(), head(), tail(), edit(), Load data frames—reading from .CSV files, Sub setting data frames, reading from tab separated value files, Reading from tables, merging data frames	12 Hours
V	<b>Data Visualization using R:</b> Reading and getting data into R (External Data), Using CSV files, XML files, Web Data, JSON files, Databases, Excel files, Working with R Charts and Graphs: Histograms, Boxplots, Bar Charts, Line Graphs, Scatter plots, Pie Chart	12 Hours

**Prescribed Text Book:**

1. Seema Acharya--Data Analytics using R, McGraw Hill education (India) Private Limited.
2. Big Data Analytics, Introduction to Hadoop, Spark, and Machine-Learning, Raj Kamal, Preeti Saxena, McGraw Hill, 2018

**Reference Books:**

1. Seema Acharya, Subhashini Chellappan --- Big Data and Analytics second edition, Wiley
2. Big Data, Big Analytics: Emerging Business intelligence and Analytic trends for Today's Business, Michael Minnelli, Michelle Chambers, and Ambiga Dhiraj, John Wiley & Sons, 2013
3. An Introduction to R, Notes on R: A Programming Environment for Data Analysis and Graphics. W. N. Venables, D.M. Smith and the R Development Core Team



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COMPUTER SCIENCE      SECCAT01      2023-24      B.COM (CA & E-C-C)  
SEMESTER – VI      PAPER – VI      Max. Marks 75

Model Paper: BIGDATA ANALYTICS USING R

NO of Hours: 3

No Of Credits: 3

Pass Marks 30

### Section-A

*Answer any four questions.*

*(At least 1 question should be given from each Unit)*

*(5 x 5=25 Marks)*

1. What is big data and why to use a big data? (CO1, L1)
2. What is big data analytics? (CO2, L1)
3. What are the advantages of R? (CO2, L1)
4. Explain ls () command in R. (CO3, L2)
5. Write a short note on charts. (CO5, L1)
6. Develop R script to load data into data frames from files. (CO4, L6)
7. Write about the control structures in R with examples. (CO3, L1)
8. Discuss about reading from tab separated value files? (CO5, L2)

### Section-B

*Answer all questions.*

*(5X10=50Marks)*

*(Two questions should be given from each unit with internal choice)*

9. (a) Give Classification of Digital Data and explain it. (CO1, L2)  
OR  
(b) Explain Characteristics of Data with an example. (CO1, L2)
10. (a) Write about Importance of big Data Analytics. (CO2, L1)  
OR  
(b) Explain Classification of Analytics. (CO2, L2)
11. (a) Write about the Data types in Explain with examples. (CO3, L1)  
OR  
(b) Construct Vector in R and explain various operations on it. (CO3, L3)
12. (a) What are the data frames? Write its significance in R-Language. (CO4, L1)  
OR  
(b) Demonstrate various functions used in data frames. (CO4, L2)
13. (a) Build a code in R for reading and getting data into R from databases. (CO5, L6)  
OR  
(b) Develop below plots in R (CO5, L6)  
a) Box Whisker plots      b) Scatter plots      c) Pairs plots

## BIG DATA ANALYTICS USING 'R' LAB

Offered to III B.Com (Computer Applications & E-Commerce-Computers) – VI Semester

Course Code	: SECCAP01	No. Of Lecture Hours per week	: 2
Year of Introduction	: 2022-23	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 10
Year of Revision	: NIL	SEE Marks	: 40
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 2

### **Course Outcomes:**

Students at the successful completion of the course will be able to:

- ❖ CO1: Implement simple scripts or programs in R. (PO5)
- ❖ CO2: Access online resources for R and import new function packages into the R workspace. (PO5, PO7)
- ❖ CO3: Import, review, manipulate and summarize data-sets in R (PO5, PO7)
- ❖ CO4: Explore data-sets to create testable hypotheses and identify appropriate statistical tests. (PO5, PO7)
- ❖ CO5: Create and edit visualizations with R. (PO5, PO7)

### **Practical Syllabus: (30 Periods)**

1. Create a vector in R and perform operations on it (arithmetic operations, combining Vectors, retrieving elements of vector, assign names to vector elements).
2. Create integer, complex, logical, character data type objects in R and print their values and their class using print and class functions.
3. Create a matrix of values in R and extract data from matrix. (Ex. Second row third etc.) find transpose of matrix and combine two matrices using Rbind and Cbind functions.
4. Create a list in R and perform operations on it like list slicing, sum and mean functions, head and tail functions and finally delete list using rm() function.
5. Create data frame in R and perform operations on it
6. Write code in R to find out whether a number is prime or not.
7. Print numbers from 1 to 100 using while loop and for loop in R.
8. Find the factorial of a number using recursion in R.
9. Perform arithmetic operations in R using switch case
10. Write a code in R to find out whether the number is Armstrong or not.
11. Program to find Multiplication table from 1 to 10 numbers input by user.
12. Import data into R from text and excel files using read table() and read.csv() function.
13. Create a dataset and draw different types of graphics using plot, box plot, histogram, pair plot functions.
14. Create a dataset and draw different types of graphs using bar charts, pie chart functions.
15. Create custom contingency in R and perform operations on it.

### **Lab References:**

1. Seema Acharya--Data Analytics using R, McGraw Hill education (India) Private Limited.
2. Big Data Analytics, Introduction to Hadoop, Spark, and Machine-Learning, Raj kamal, Preeti Saxena, McGraw Hill, 2018

### **Reference Materials on the Web/web-links:**

<https://www.wiley.com/>



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**DATA SCIENCE USING PYTHON**

**Offered to III B.Com (Computer Applications & E-Commerce-Computers) – VI Semester**

Course Code	: SECCAT07	No. Of Lecture Hours per week	: 3
Year of Introduction	: 2022-23	Total No. Of Lecture Hours	: 60
Year of Offering	: 2023-24	CIA Marks	: 25
Year of Revision	: NIL	SEE Marks	: 75
Percentage of Revision	: 0%	Total Marks	: 100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 3

**Course Objective:**

The main objective of the course is to provide students with the basic concepts of Python, its syntax, functions and packages to enable them to write scripts for data manipulation and analysis. The course develops skills of writing and running a code using Python.

**Course Outcomes:**

Students at the successful completion of the course will be able to:

- ❖ CO1: Understand the need and importance of data science. (PO5,PO7)
- ❖ CO2: Understand basic concepts of python and implementing control structures in python. (PO5)
- ❖ CO3: Implement strings and other data structures in python (PO5,PO7)
- ❖ CO4: Learn and Implement functions and modules in python. (PO5)
- ❖ CO5: Learn and Implement data cleaning and plotting using pandas. (PO5,PO7)

**Syllabus**

Unit	Learning Units	Lecture Hours
I	<b>INTRODUCTION TO DATA SCIENCE:</b> Data science and its importance, Advantages of data science, The process of data science, Responsibilities of a data scientist, Qualifications of data scientists, Would you be a good data scientist?, Why to use python for data science?	11 Hours
II	<b>INTRODUCTION TO PYTHON:</b> What is python?, Features of python, History of python, Writing and executing the python program, Basic syntax, Variables, Keywords, Data types, Operators, Indentation, Control Structures - Conditional statements - If, If-else, Nested if-else, Looping statements - for, While, Nested Loops, Break, Continue, Pass	14 Hours
III	<b>STRINGS AND DATA STRUCTURES:</b> Strings - definition, accessing, slicing and basic operations, Lists - introduction, accessing list, operations, working with lists, functions and methods, Tuples - introduction, accessing tuple, operations, Dictionaries- introduction, accessing values in dictionaries, working with dictionaries.	13 Hours

IV	<b>FUNCTIONS AND MODULES:</b> Functions- Defining a function, Calling a function, Types of functions, Function arguments, Local and global variables, Lambda and recursive functions, Modules - Math, Random, OS, Date and Time	11 Hours
V	<b>PANDAS:</b> What is Pandas?, Series, Data Frame, Read CSV Files, Analyzing Data Frames, Data Correlations, Data Cleaning---Empty cells, Data in wrong format, Wrong data, Duplicates, Pandas Plotting-- plot () method, bar plot, hist plot, box plot, area plot, scatter plot, pie plot	11 Hours

**Prescribed Books:**

1. Steven cooper--- Data Science from Scratch, Kindle edition
2. Reema thareja—Python Programming using problem solving approach, Oxford Publication

**Reference Books:**

Wes McKinney--- Python for Data Analysis, O'REILLY

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COMPUTER SCIENCE      SECCAT07      2023-24      B.COM (CA & E-C-C)  
SEMESTER – VI      PAPER – VI      Max. Marks 75

Model Paper: DATA SCIENCE USING PYTHON

NO of Hours: 3

No Of Credits: 3

Pass Marks 30

### Section-A

*Answer any four questions.*

*(At least 1 question should be given from each Unit)*

*(5 x 5=25 Marks)*

1. Write advantages of data science. (CO1, L1)
2. What are the qualifications of data scientist? (CO1, L2)
3. Explain about the history of python. (CO2, L1)
4. Discuss about keywords used in Python (CO2, L2)
5. Explain about string operations in python. (CO3, L1)
6. Explain about the date and time module in python. (CO4, L1)
7. Explain about local and global variables? (CO4, L1)
8. What is data cleaning? Explain about duplicates in pandas. (CO5, L1)

### Section – B

*Answer all questions.*

*(Two questions should be given from each unit with internal choice)*

*(5x10=50Marks)*

9. (a) What is Data Science? Explain the Responsibilities of a data scientist.(CO1, L2)  
OR  
(b) Explain the use of python for data science?(CO1, L1)
10. (a) Explain different types of conditional statements with examples.(CO2, L1)  
OR  
(b) Explain different types of Looping statements with examples.(CO2, L1)
11. (a) What is a list? Explain different operations of lists with examples in python. (CO3, L2)  
OR  
(b) What is a Dictionary? Explain accessing values in it with examples in python (CO3, L2)
12. (a) Explain Function definition, calling & different types in python with example.(CO4, L1)  
OR  
(b) Explain about random and math module in python with an example.(CO4, L1)
13. (a) What is a data frame? Illustrate the concept of analysing the data frames.(CO5, L2)  
OR  
(b) Explain about reading .csv files with example? (CO5, L1)

## DATA SCIENCE USING PYTHON LAB

Offered to III B.Com (Computer Applications & E-Commerce-Computers) – VI Semester

Course Code	: SECCAP07	No. Of Lecture Hours per week	: 2
Year of Introduction	: 2022-23	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 10
Year of Revision	: NIL	SEE Marks	: 40
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 2

### **Course Outcomes:**

Students at the successful completion of the course will be able to:

- ❖ CO1: Implement simple programs in basics of python.(PO5)
- ❖ CO2: Implement control structures in python.(PO5)
- ❖ CO3: Implement data structures like strings, list, tuples, dictionaries in python.(PO5,PO7)
- ❖ CO4:Implementation of data frames, data cleaning and plotting in pandas.(PO5,PO7)
- ❖ CO5: Create different plots for basic exploratory data analysis (PO5, PO7)

### **Practical Syllabus: (30 Periods):**

1. Python Program to Find the Square Root
2. Python Program to Swap Two Variables
3. Python Program to Generate a Random Number
4. Python Program to check if a Number is odd or Even
5. Python Program to Find the Largest Among Four Numbers
6. Python Program to Check Prime Number
7. Python Program to Display the multiplication Table
8. Python Program to Print the Fibonacci sequence
9. Python Program to Check Armstrong Number
10. Python Program to Find the Sum of Natural Numbers
11. Python Program to Make a Simple Calculator
12. Python Program to Find Factorial of Number Using Recursion
13. Python Program to Add Two Matrices
14. Python Program to Multiply Two Matrices
15. Python Program to Check Whether a String is Palindrome or Not
16. Python Program to perform operations on strings.
17. Python Program to create a list and perform operations on its contents.
18. Python Program to perform operations on tuples.
19. Python Program to create a dictionary and print its content.
20. Python program to import data from CSV file using pandas.
21. Python program to demonstrate plots

### **Lab References:**

Reema thareja—Python Programming using problem solving approach, Oxford Publication

### **Reference Materials on the Web/web-links:**

1. <https://www.w3schools.com/python/>
2. <https://www.geeksforgeeks.org/python-basics/>

### Course Structure

**Class** : **B.Sc. (MPCs, MCCs, MSCs)**

**Semester** : **IV**

<b>S. No</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Teaching Hours per week</b>	<b>IA</b>	<b>SEE</b>	<b>Total Marks</b>	<b>Credits</b>
1	CSCT41C	Operating systems	4	30	70	100	4
2	CSCP41C	Operating systems LAB	2	10	40	50	1



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**OPERATING SYSTEMS**

**Offered to II B.Sc (MPCs, MCCs, MSCs) - IV Semester**

Course Code	: CSCT41C	No. Of Lecture Hours per week	:	4
Year of Introduction	: 2021-22	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	25
Year of Revision	: NIL	SEE Marks	:	75
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	4

**Course Prerequisites (if any):**

Basic Knowledge in computers, data structures and C programming language

**Course Description:**

This course provides basic knowledge about operating system functions, its architectural design along with implementation of various scheduling algorithms. This course also provides knowledge in handling deadlock situation.

**Course Objectives:**

The Purpose of this course is to give students an idea of the services provided by the operating system, structure, organization of the file system, process synchronizations, scheduling and memory management.

**Course Outcomes:**

At the end of this course, students should be able to

- ❖ CO1: Understand Operating System Architectural design and its services. (PO5, PO6, PO7)
- ❖ CO2: Implementation of Scheduling Algorithms. (PO5, PO6, PO7)
- ❖ CO3: Analyze memory management techniques, concepts of virtual memory and disk scheduling. (PO5, PO6, PO7)
- ❖ CO4: Understand the implementation of file systems and directories with the interfacing of IO devices with the operating system. (PO5, PO6, PO7)
- ❖ CO5: Identify the deadlock situation and provide appropriate solutions so that protection and security of the operating system is also maintained. (PO5, PO6, PO7)

**Syllabus**

Unit	Learning Units	Lecture Hours
I	<b>Operating System:</b> Introduction, Operating Systems Objectives and functions, Computer System Architecture, OS Structure, OS Operations. Evolution of Operating Systems, Types of operating system - Simple, Batch, Multi programmed, Time shared, Parallel, Distributed Systems, Real-Time Systems, Operating System services.	11 Hours



II	<b>Process and CPU Scheduling</b> – Process concepts, The Process, Process State, Process Control Block, Process communication, Threads. Process Scheduling - Scheduling Queues, Schedulers, Context Switch, Preemptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms, Case studies: Linux, Windows. Process Synchronization - The Critical section Problem, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, monitors.	13 Hours
III	<b>Memory Management and Virtual Memory</b> – Logical & physical Address Space, Swapping, Contiguous Allocation, Paging - Structure of Page Table, Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demanding Paging, Page Replacement, Page Replacement Algorithms, Allocation of Frames.	13 Hours
IV	<b>File System Interface</b> – The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure, Mass Storage Structure - Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling.	12 Hours
V	<b>Deadlocks</b> – System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.	11 Hours

**Prescribed Text Books**

Silberschatz, Galvin, Gagne Operating System Concepts, eight Edition John Willey & Sons INC

**Reference Text Book**

1. Abraham Silberchatz, Peter B. Galvin, Greg Gagne Operating System Principles, 8th Edition Wiley Student Edition
2. Naresh Chauhan, Principles of Operating Systems OXFORD University Press

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COMPUTER SCIENCE      CSCT41C      2023-24      B.SC (MPCs, MCCs, MSCs)  
SEMESTER – IV      Max. Marks 70

Model Paper: OPERATING SYSTEMS

NO of Hours: 3

No Of Credits: 3

Pass Marks 28

**Section-A**

*Answer any four questions.*

*(At least 1 question should be given from each Unit)*

*(4 x 5=20 Marks)*

1. Explain computer system architecture with a neat diagram. (CO1, L2)
2. Write about process states with a neat diagram. (CO1, L2)
3. Explain about context switching. (CO2, L2)
4. Write short notes on swapping. (CO3, L2)
5. Write about different file access methods. (CO4, L2)
6. What are the necessary conditions for deadlocks? (CO5, L2)

**SECTION – B**

*Answer ALL questions:*

*5 X 10 = 50 Marks*

7. (a). Define operating system and explain its functions. (CO1, L2)  
OR  
(b.) Explain about various types of operating systems. (CO1, L2)
8. (a) Explain SJF and priority scheduling algorithms with an example. (CO2, L2)  
OR  
(b) Explain about inter process communication. (CO2, L2)
9. (a) Discuss the concept of paging with neat diagram. (CO3, L2)  
OR  
(b) Consider the following page reference string and calculate the number of page faults by using FIFO and LRU with three frames. 7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1 (CO3, L2)
10. (a). Explain in detail file operations. (CO4, L2)  
OR  
(b). Discuss about FCFS disk scheduling and SSTF scheduling with a suitable example. (CO4,L2)
11. (a) What is deadlock ?explain deadlock preventions methods. (CO5, L2)  
OR  
(b) Explain banker's algorithm for deadlock avoidance.(CO5, L2)

## OPERATING SYSTEMS LAB

Offered to III B.Com (Computer Applications & E-Commerce-Computers) – VI Semester

Course Code	: CSCP41C	No. Of Lecture Hours per week	: 2
Year of Introduction	: 2021-22	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 10
Year of Revision	: NIL	SEE Marks	: 40
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

### Course Prerequisites (if any):

Basic Knowledge in OS concepts, data structures and C programming language

### Course Description:

This course deals with training students in developing and implementing logics for various OS scheduling algorithms. It also enables students to gain practical knowledge in implementing various UNIX commands.

### Course Objective:

The Purpose of this course is to have students understand and the principles in the design and implementation of operating system software.

### Course Outcomes:

At the end of this course, students should be able to

- ❖ CO1: Implementing DOS & UNIX Commands(PO5, PO6, PO7)
- ❖ CO2: Implementing CPU Scheduling Algorithms(PO5, PO6, PO7)
- ❖ CO3: Implementing CPU Scheduling Algorithms, Deadlocks Avoidance, Prevention & Memory Management Techniques(PO5, PO6, PO7)
- ❖ CO4: Implementing Contiguous Memory Allocation Techniques & Page Replacement Algorithms(PO5, PO6, PO7)
- ❖ CO5: Implementing File allocation Strategies(PO5, PO6, PO7)

### Lab Exercises

1. DOS - Internal Commands
2. UNIX Commands

1. In your home directory create a directory named DIR
2. Copy all files whose filenames satisfy the following conditions to ~/DIR. The files are in /usr/include directory, their names start with m, end with .h and contain a number.
3. Create a subdirectory called SUBDIR in your DIR directory.
4. The first five lines of each file you have copied from /usr/include copy to file ~/DIR/SUBDIR/first five.
5. The last lines of files in ~/DIR copy to file ~/DIR/SUBDIR/last.
6. Concatenate the two files in ~/DIR/SUBDIR into one file ~/DIR/SUBDIR/first and last
7. Delete the files in ~/DIR/SUBDIR except first and last.
8. Store the number of files and directories in ~/DIR into a file ~/DIR/SUBDIR/count
9. Output the long information in the ~/DIR/SUBDIR directory. (Not its content, but information on it).
10. Delete the contents of ~/DIR/SUBDIR/first and last file without removing the file itself.
11. Add a line containing just a star sign (i.e. \*) to file ~/DIR/SUBDIR/first and last.
12. Delete ~/DIR together with all the files it contains.
13. Output lines number 11-20 from file /etc/passwd.

### 3. List of Programmes

1. Write a Program to implement First Come First Serve Scheduling algorithm
2. Write a Program to implement Shortest Job First Scheduling algorithm
3. Write a Program to implement Round Robin Scheduling algorithm
4. Write a Program to implement Priority Scheduling algorithm
5. Write a program to implement Worst Fit Contiguous Memory Allocation
6. Write a program to implement Best Fit Contiguous Memory Allocation
7. Write a program to implement First Fit Contiguous Memory Allocation
8. Write a program to implement First In First Out Page replacement Algorithm
9. Write a program to implement First In Least Recently Used Page replacement Algorithm
10. Write a program to implement First In Optimal Page replacement Algorithm

### Course Structure

**Class : B.Com (Computer Applications & E-Commerce-Computers)**

**Semester : IV**

<b>S. No</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Teaching Hours per week</b>	<b>IA</b>	<b>SEE</b>	<b>Total Marks</b>	<b>Credits</b>
1	CABT41A	Database Management Systems	4	30	70	100	4
2	CABP41A	Database Management Systems Lab	2	10	40	50	1
3	CCSCT42	Object Oriented Programming using Java	4	30	70	100	4
4	CCSCP42	Object Oriented Programming using Java Lab	2	10	40	50	1



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An Autonomous college in the Jurisdiction of Krishna University

Accredited by NAAC "A" Grade \* ISO 9001:2015 Certified Institution

**DATA BASE MANAGEMENT SYSTEMS**

**Offered to II B.Com (Computer Applications & E-Commerce-Computers) - IV Semester**

<b>Course Code</b>	: <b>CABT41A</b>	No. Of Lecture Hours per week	:	4
Year of Introduction	: 2021-22	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	30
Year of Revision	: NIL	SEE Marks	:	70
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	4

**Course Description:**

This course focuses towards Database System Concepts and Architecture, ER models, relational algebra relational calculus, SQL and PL/SQL.

**Course Objectives:**

The objective of the course is to introduce the design and development of databases with special emphasis on relational databases. Design & develop database for large volumes & varieties of data with optimized data processing techniques.

**Course Outcomes:**

At the end of this course, students should be able to:

- ❖ CO1: Understand the Characteristics and basics of Database.(PO5, PO7)
- ❖ CO2: Understand file system and Architecture of DBMS(PO5, PO7)
- ❖ CO3: Enlighten ER Diagrams, Relationship, Notation & schema. (PO5, PO7)
- ❖ CO4: Enlighten EER Diagrams & Applying constraints on data. (PO5, PO7)
- ❖ CO5: Implementing SQL commands retrieve, insert, modify and update(PO5, PO7)

**Syllabus:**

Unit	Learning Units	Lecture Hours
I	<b>Databases and Database Users:</b> Introduction - Data and Information, Characteristics of the Database Approach, Self-Describing Nature of the Database System, Insulation between Programs and Data, Data Abstraction, Support of Multiple Views of the data, Sharing of Data and multiuser Transaction Processing, Evolution of Database System	9 Hours
II	<b>Traditional File Processing Systems</b> - Disadvantages of Traditional File Processing Systems, Advantages of the Database Approach, Database system Concepts and Architecture - Data Models, Schemas and Instances, Categories of Data Models, Schemas, Instances and Database State, Three-Schema architecture for database development, Data Independence	9 Hours

III	<p><b>Entity Relationship Model</b> – Introduction, Entity types, Entity sets, Attributes and Keys, Entities and Attributes, Entity Types, Entity Sets, Keys and Value Sets, Relationships, Relationship types, Roles, and Structural Constraints – Relational types, Sets and Instances, Relationship degree, Role names, recursive relationships, constraints on relationship types, Attributes of relationship types. Weak entity types, E R diagrams, Naming conventions, design issues - Summary of Notation for ER Diagrams, Proper Naming of Schema Constructs.</p>	13 Hours
IV	<p><b>Enhanced Entity-Relationship:</b> Subclasses, super classes, and inheritance, Specialization and Generalization, Constraints and characteristics of Specialization and Generalization, Data Abstraction and knowledge representation concepts - Classification and Instantiation, Identification, Aggregation and Association</p> <p><b>The Relational Data Model:</b> Relational Constraints, Introduction, Relational Model Concepts, Domains, Attributes, Tuples and Relations, Relational Model Notation, Relational Constraints and Relational Database Schemas, Entity Integrity, Referential, Integrity and Foreign Keys</p>	14 Hours
V	<p><b>SQL:</b> Introduction, Data Definition, Constraints and Schema changes in SQL - Schema AND Catalog Concepts in SQL, The CREATE TABLE Command and SQL Data Types and Constraints, The DROP SCHEMA and DROP TABLE Command, The ALTER TABLE Command, Basic Queries in SQL - The SELECT-FROM-WHERE Structure of SQL Queries, Dealing with Ambiguous Attribute Names and Naming (Aliasing), Unspecified WHERE-Clause and Use of Asterisk (*), Tables as sets in SQL, Substring Comparisons, Arithmetic Operators, and Ordering. Aggregate Functions and Grouping, Insert, Delete, and Update Statements in SQL - The INSERT Command, the DELETE Command, The Update Command.</p>	15 Hours

**Prescribed Text Books:**

1. R.Elmasri and S.Navathe Fundamentals of Database Systems
2. Jeffrey A.Hoffer,V.Ramesh, HeikkiTopi Modern Database Management Pearson
3. Abraham Silberschatz, Henry Korth, and S. Sudarshan Database System Concepts McGrawhill, 2010

**Reference Text Books:**

1. Raghu Ramakrishnan Database Management Systems McGrawhill,2002
2. J .D.Ullman Priniciples of Database Systems
3. Bipin C Desai An Introduction to Database Systems
4. .Sumathi, S. Esakkirajan Fundamentals of Relational Database Management Systems Springer Publications

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COMPUTER SCIENCE      CABT41A      2023-24      B.Com (CA & E-C-C)  
SEMESTER – IV      Max. Marks 70

Model Paper: Data base Management Systems

NO of Hours: 4

No Of Credits: 4

Pass Marks 28

### Section-A

*Answer any four questions.*

*(At least 1 question should be given from each Unit)*

*(4 x 5=20 Marks)*

1. Explain the difference between data and information. (CO1, L2)
2. List the Disadvantages of Traditional file system? (CO2, L1)
3. What are Data Models, Instance and Database State? (CO2, L1)
4. Explain Relationship Types, Degrees and Role names. (CO3, L2)
5. What is constraint? Explain different type of constraints. (CO4, L1)
6. Demonstrate the features of SQL. (CO5, L2)

### SECTION – B

*Answer ALL questions:*

*5 X 10 = 50 Marks*

7. A) Outline the characteristics of database management system. (CO1, L2)  
(OR)  
B) Illustrate the evaluation of database management system. (CO1, L2)
8. A) List advantages of database management system. (CO2, L1)  
(OR)  
B) Explain the concept of Three schema architecture and data independence. (CO2, L1)
9. A) Show ER diagram for hospital management system and identify weak, Strong and derived attributes in the above diagram. (CO3, L1)  
(OR)  
B) Define ER diagram, Naming conventions and design issues. (CO3, L1)
10. A) What is Specialization & Generalization in EER? Define Data abstraction and Knowledge representation concept? (CO4, L1)  
(OR)  
B) Explain aggregation functions and groupings in relational algebra. (CO4, L1)
11. A) Explain aggregation functions and groupings in SQL. (CO5, L2)  
(OR)  
B) Explain different types of constraints with examples. (CO5, L2)



## DATA BASE MANAGEMENT SYSTEMS LAB

**Offered to II B.Com (Computer Applications & E-Commerce-Computers) – IV Semester**

<b>Course Code</b>	<b>: CABP41A</b>	No. Of Lecture Hours per week	<b>: 2</b>
Year of Introduction	: 2021-22	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 10
Year of Revision	: NIL	SEE Marks	: 40
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

### **Course Prerequisites (if any):**

A good background in DBMS fundamentals is required. Students should be comfortable with the relational model, SQL, and the basic functions of database systems.

### **Course Objective:**

The major objective of this lab is to provide a strong formal foundation in database concepts, technology and practice to the participants to groom them into well-informed database application developers.

### **Course Outcomes:**

- ❖ CO1: Construct queries using SQL in database creation. (PO5, PO7)
- ❖ CO2: Construct queries using SQL in database based on criterion. (PO5, PO7)
- ❖ CO3: Implement Enforce integrity Constraints in SQL. (PO5, PO7)
- ❖ CO4: Implementing Aggregate functions in SQL (PO5, PO7)
- ❖ CO5: Implementing query in database using sql DDL/DML Commands (PO5, PO7)

### **Lab List**

#### **A. Create a Department table with the following fields: DEPTNO, DNAME and LOCATION.**

1. Describe the structure of “DEPT” table.
2. Insert values into “DEPT” table.
3. Select all values from “DEPT” table.

#### **B. Create EMPLOYEE table with the following fields: EMPNO, ENAME, JOB, MGR, HIRE DATE, SALARY, COMMISTION and DEPTNO.**

1. Describe the structure of “EMP” table.
2. Insert the values into “EMP” table.
3. Select all the values from “EMP” table.

#### **C. Create table GRADE with the following fields: GRADE, LOSAL and HISAL.**

1. Insert values into “GRADE” table.
2. Select all the values from “GRADE” table.

#### **D) LAB CYCLE-1:**

1. List all the employee information for department 10.
2. Find out the names of all employees.
3. Retrieve the list of names and salary of all employees.
4. Find the names of employees who have a salary equal to RS3000.
5. List the employee whose names start with “s”.
6. List the employee names ending with “s”.
7. List the names of employees whose names have exactly 5 characters.

8. List the employee names having D as the second character.
9. List the employee names having two A's in their name.
10. Display all employee names which have "TH" or "LL" in them.
11. List out EMPNO, ENAME and SALARY of the employees whose salary is between 1500 and 2000.
12. List the names of employees who belong to department 10, 20.
13. List employee number of the employees who don't have the name of "FORD", "JAMES" (OR) "JONES".
14. Display all the different job types.
15. Retrieve all rows from EMP table for department 30 and order by name.

**E) LAB CYCLE – 2:**

1. List the employee names and HIREDATES in descending order of HIREDATE.
2. Retrieve department names and no's in ascending order of DNAME.
3. List all employees' information that has a manager.
4. List name of the employees, job and commission of those employees who do the job of clerk or salesman and get no commission.
5. List the names and jobs of all clerks in department 20.
6. Display current data & time.
7. Display the concatenated string.
8. Display string "SMITH" of first character as capital letter.
9. Display the length of a string "SALESMAN".
10. Display the string "SALESMAN" in lower case.
11. Display all department names in upper case.
12. Display the value using ABS.
13. Displays the value using CEIL.
14. Display the value using FLOOR.
15. Display the value using POWER.
16. Display the value using SQRT.
17. Display all employees who were hired during 1982.
18. List the no of employees working with company.
19. List the no of jobs available in the emp table.
20. List the total salaries payable to employees.

**F) LAB CYCLE – 3:**

- 1) List the maximum salary of employee working as a salesman.
- 2) List the minimum salary of employee from employee table.
- 3) List the avg salary from Employee table.
- 4) List the avg salary and no of employees working in the deptno 20.
- 5) Display the total salary for each department.
- 6) List the average salary of each job in the EMP table.
- 7) List the maximum salary for each department.
- 8) Find the total salary for each job of each department.
- 9) Display the no of employee in each department.
- 10) To find the maximum salary of each department, but show only the department that has a maximum salary of more than RS 2900.
- 11) List the total salary, maximum, minimum and average salary of employees job wise for department no and display only those rows having average salary greater than 1000.
- 12) Display the job title and total monthly salary for each job title with a total pay role exceeding RS 5000 and excludes sales people and sorts the list by the total monthly salary.

- 13) Display the different job in department 20 and 30.
- 14) List the employee no and names working in department no 20 and 30.
- 15) Display the different jobs in department 20 and 30 with union all.
- 16) Display all the employee names dept no's and dept names.
- 17) Display all employees in "DALLAS"
- 18) Display the employee names where salary is greater than employee no 7566.
- 19) Display the employee whose job title is same as that of employee 7369.
- 20) Display the employee name where salary is equal to the minimum salary.
- 21) Find the employees who earn the same salary as the minimum salary for departments.
- 22) To display all the departments that has a minimum salary greater than that of department 20.



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**OBJECT ORIENTED PROGRAMMING USING JAVA**

**Offered to II B.Com (Computer Applications & E-Commerce-Computers) - IV Semester**

Course Code	: CABT42	No. Of Lecture Hours per week	: 4
Year of Introduction	: 2021-22	Total No. Of Lecture Hours	: 60
Year of Offering	: 2023-24	CIA Marks	: 30
Year of Revision	: NIL	SEE Marks	: 70
Percentage of Revision	: 0%	Total Marks	: 100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 4

**Course Objective:**

This Course will enable students to understand the basic concepts of object oriented programming and difference between procedure-oriented programming; get a clear understanding of basics of java programming

**Course Outcomes:**

- ❖ CO1: Able to understand the concept and underlying principles of Object-Oriented Programming.
- ❖ CO2: Able to Understand the Basic concepts of Data types & Operators
- ❖ CO3: Able to Implement Decision & Looping Statements
- ❖ CO4: Able to Implement Object Oriented Programming Concepts like class, constructor, overloading in java.
- ❖ CO5: Able to understand the concept of Inheritance and Exceptions Object-Oriented Programming.

**Syllabus**

Unit	Learning Units	Lecture Hours
I	<b>Fundamentals of Object Oriented Programming:</b> Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP, Java features:	10 Hours
II	<b>Overview of Java Language:</b> Introduction, Simple Java program structure, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments. <b>Constants, Variables &amp; Data Types:</b> Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, Type casting, Getting Value of Variables, Operators.	14 Hours
III	<b>Decision Making &amp; Branching:</b> Introduction, Decision making with if statement, Simple if statement, if-Else statement, Nesting of if-else statements, the else if ladder, the switch statement, the conditional operator. <b>Looping:</b> Introduction, while statement, do-while statement, for statement, Jumps in loops.	12 Hours

IV	<b>Classes, Objects &amp; Methods:</b> Introduction, defining a class, adding variables, adding methods, creating objects, Accessing class members, Constructors, Method overloading, Method Overriding, Static members, Nesting of methods;	10 Hours
V	<b>Inheritance:</b> Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Abstract Methods and Classes; <b>Arrays, Strings And Vectors:</b> Arrays, One-dimensional arrays, Creating an array, Two – dimensional arrays, Strings, Vectors, Wrapper classes; <b>Interfaces: Multiple Inheritance:</b> Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Assessing interface variables;	14 Hours

**Prescribed Text Book:**

E. Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.

**Reference Books**

1. Programming In Java By Sachin Malhotra And Saurabh Choudhary From Oxford University Press
2. Object Oriented Programming Through Java by P. Radha Krishna, Universities Press
3. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series,
4. Deitel&Deitel. Java TM: How to Program, PHI (2007)
5. Java Programming: From Problem Analysis to Program Design- D.S Mallik

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COMPUTER SCIENCE      CABT42      2023-24      B.Com (CA & E-C-C)  
SEMESTER – IV      Max. Marks 70

Model Paper: Object Oriented Programming Using JAVA

NO of Hours: 4

No Of Credits: 4

Pass Marks 28

**Section-A**

*Answer any four questions.*

*(At least 1 question should be given from each Unit)*

*(4 x 5=20 Marks)*

1. Write the benefits of Object oriented Programming? (CO1, L2)
2. Explain Command Line arguments? (CO2, L1)
3. Explain Type Casting? (CO2, L1)
4. Explain about switch statement with example? (CO3, L2)
5. Explain Nesting of Methods? (CO4, L1)
6. Discuss about Wrapper Classes? (CO5, L2)

**SECTION – B**

*Answer ALL questions:*

*5 X 10 = 50 Marks*

7. A) Outline the features of Java. (CO1, L2)  
(OR)  
B) Discuss about Object Oriented Paradigm. (CO1, L2)
8. A) List the Java Tokens? Explain. (CO2, L1)  
(OR)  
B) Explain about scope of variables. (CO2, L1)
9. A) Explain decision making statements with syntax and examples?  
(CO3, L1)  
(OR)  
B) Differentiate while and do-while loops? Explain with syntax and examples?  
(CO3, L1)
10. A) What is Method overloading? Explain with example? (CO4, L1)  
(OR)  
B) Discuss about static methods? (CO4, L1)
11. A) Explain about final variables and methods? (CO5, L2)  
(OR)  
B) What is Interface? How to implement interface? (CO5, L2)

## **OBJECT ORIENTED PROGRAMMING USING JAVA LAB**

**Offered to II B.Com (Computer Applications & E-Commerce-Computers) – IV Semester**

<b>Course Code</b>	<b>: CABT42</b>	No. Of Lecture Hours per week	<b>: 2</b>
Year of Introduction	: 2021-22	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 10
Year of Revision	: NIL	SEE Marks	: 40
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

### **Course Objective:**

- ❖ To write programs for solving real world problems using java collection frame work.
- ❖ To be able to identify problems and apply object-oriented programming concept to build information system.
- ❖ To be able to implement common I/O operations using Java

### **Course Outcomes:**

- ❖ CO1: Write basic Java applications and use arrays (PO1, L1)
- ❖ CO2: Implementing two dimensional arrays (PO2, L2)
- ❖ CO3: Create classes, objects and apply Inheritance (PO2, L3)
- ❖ CO4: Write Method overloading and method overriding. (PO3, L4)
- ❖ CO5: Implementing Interfaces (PO5, L5)

### **Lab List:**

1. Write a program to perform various String Operations
2. Write a program to print the given number is Armstrong or not?
3. Prompt for the cost and selling price of an article and display the profit (or) loss
4. Write a program to print the numbers given by command line arguments
5. Write a program on class and object in java
6. Illustrate the method overriding in JAVA
7. Write a program to find the Simple Interest using Multilevel Inheritance
8. Write a program to display matrix multiplication.
9. Write a program on interface in java
10. Write a program on inheritance

### Course Structure

**Class** : **B.Sc. Honours Computer Science**

**Semester** : **II**

<b>S. No</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Major / Minor</b>	<b>Teaching Hours per week</b>	<b>IA</b>	<b>SE E</b>	<b>Total Marks</b>	<b>Credits</b>
1	23CSMAL121	PROBLEM SOLVING Using "C"	Major	4	30	70	100	3
2	23CSMAP121	PROBLEM SOLVING Using "C" LAB	Major	2	15	35	50	1





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**PROBLEM SOLVING Using "C"**

**Offered to B.Sc. Honours (Computer Science) – Major – II Semester**

Course Code	: 23CSMAL121	No. Of Lecture Hours per week	:	4
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	30
Year of Revision	: New Course	SEE Marks	:	70
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	3

**Course Objective:**

This course aims to provide exposure to problem-solving through programming and introduce the concepts of the C Programming language.

**Course outcomes (based on BTL):**

- CO1. Understand Tokens and write basic C programs. (PO5)
- CO2. Understand control structures in C. (PO5)
- CO3. Understand arrays and strings and implement them.
- CO4. Understand the right way of using functions, pointers, and structures in C (PO5)
- CO5. Develop and test programs written in C files (PO5,PO7)

**Mapping of Course Outcomes (COs) with Programme Outcomes (POs) & PSOs:**

	CO-PO MATRIX							
	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
<b>23CSMAL121</b>	CO1					H		
	CO2					H		
	CO3					H		
	CO4					H		
	CO5					H		M

**Syllabus:**

Unit No	Syllabus Content	Lecture Hours
I	<b>Introduction to C:</b> Introduction – Structure of C Program, Writing the first C Program, File used in C Program, Compiling and Executing C Programs, Using Comments, Keywords, Identifiers, Basic Data Types in C, Variables, Constants, I/O Statements in C, Operators in C, Programming Examples.	12
II	<b>Decision Control and Looping Statements:</b> Introduction to Decision Control Statements, Conditional Branching Statements, Iterative Statements, Nested Loops, Break and Continue Statement, goto Statement.	12

III	<b>Arrays:</b> Introduction, Declaration of Arrays, accessing elements of the Array, Storing Values in Array, Operations on Arrays, one dimensional, two dimensional and multi-dimensional arrays, character handling and strings.	10
IV	<b>Functions:</b> Introduction, using functions, Function declaration/ prototype, Function definition, function call, return statement, Passing parameters, Scope of variables, Storage Classes, Recursive functions. <b>Structure:</b> Introduction, Nested Structures, Arrays of Structures, Structures and Functions, Unions.	12
V	<b>Pointers:</b> Understanding Computer Memory, Introduction to Pointers, declaring Pointer Variables, Pointer Expressions and Pointer Arithmetic, Null Pointers, Passing Arguments to Functions using Pointer, Pointer and Arrays, Memory Allocation in C Programs, Memory Usage, Dynamic Memory Allocation, Drawbacks of Pointers. <b>Files:</b> Introduction to Files, Using Files in C, Reading Data from Files, Writing Data to Files.	14

**Textbooks:**

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.

**Reference Books:**

1. Yashavant Kanetkar - Let Us 'C' – BPB Publications.

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**MODEL QUESTION PAPER FOR SEM END EXAMINATION 2023-24**

**23CSMAL121: Problem Solving using C**

**Max Marks: 70M Offered to: B. Sc. Honours (Computer Science) TIME: 3 Hrs**

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**Section A**

**Answer all Questions**

**5 x 4=20M**

1. (A) Explain Structure of C. (CO1,L1)

OR

(B) Describe Keywords (CO1,L1)

2. (A) Write about break and continue statements (CO2,L1)

OR

(B) Write a c program to print 1 to 10 natural numbers. (CO2, L1)

3. (A) Summarize one dimensional array with suitable example. (CO3, L2)

OR

(B). Define a string with example program.(CO3, L1)

4. (A) What is scope of variables in functions. (CO4, L1)

OR

(B)Define a function and how to declare a function in c. (CO4, L1)

5. (A) Write about Reading data from files. (CO5, L1)

OR

(B) How to declare a pointer variable in c. (CO5, L1)

**Section B**

**Answer all Questions**

**5 x 10=50M**

6. (A) Explain Datatypes in c with example. (CO1,L1)

OR

(B) Explain about Input and Output statements in C. (CO1, L1)

7. (A) Summarize Looping statements in c with example.(CO2, L2)

OR

(B)Summarize iterative statements in c with example. (CO2, L2)

8. (A) Write a program for multiplication of 2 3x3 matrices. (CO3, L1)

OR

(B) Write a program by using string handling functions. (CO3, L1)

9 (A) Explain Storage Classes in c . (CO4, L2)

OR

(B) Explain 'array of structures'. (CO4, L2)

10 (A) Explain Dynamic memory allocation. (CO5, L2)

OR

(B) How to pass arguments to functions using pointers with example program. (CO5, L2)

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**PROBLEM SOLVING Using “C” LAB**  
**Offered to B.Sc. Honours (Computer Science) – Major – II Semester**

<b>Course Code</b>	: <b>23CSMAP121</b>	No. Of Lecture Hours per week	: 2
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 15
Year of Revision	: New Course	SEE Marks	: 35
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

**Course Objective:**

This course aims to provide exposure to problem-solving through programming and introduce the concepts of the C Programming language.

**Course outcomes (based on BTL):**

- CO1: Demonstration of basic C programs using branching and iterative statements. (PO7)
- CO2: Perform Operations on Arrays. (PO5)
- CO3: Perform passing parameters to functions and recursive functions. (PO5)
- CO4: Demonstration of concept of pointers. (PO5)
- CO5: Demonstration of Structures and files in C program. (PO5)

**List of Programmes:**

- 1) Write a C program to check whether the given two numbers are equal, bigger or smaller?
- 2) Write a C program to perform arithmetic operations using Switch...case?
- 3) Write a program to find the sum of individual digits of a positive integer.
- 4) Write a program to check whether the given number is Armstrong or not.
- 5) Write a program to generate the first N terms of the Fibonacci sequence.
- 6) Write a program to find both the largest and smallest number in a list of integer values
- 7) Write a program that uses functions to add two matrices.
- 8) Write a program for multiplication of two n X n matrices.
- 9) Write a program to demonstrate refaction of parameters in swapping of two integer values using Call by Value & Call by Address.
- 10) Write a program to calculate factorial of given integer value using recursive functions.
- 11) Write a program to search an element in a given list of values.
- 12) Write a program to illustrate pointer arithmetic.
- 13) Write a program to sort a given list of integers in ascending order.
- 14) Write a program to calculate the salaries of all employees using Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary) structure.
  - a. DA is 30 % of Basic Pay
  - b. HRA is 15% of Basic Pay
  - c. Deduction is 10% of (Basic Pay + DA)
  - d. Gross Salary = Basic Pay + DA + HRA
  - e. Net Salary = Gross Salary - Deduction
- 15) Write a program to perform various string operations.
- 16) Write a program to read the data character by character from a file.
- 17) Write a program to create Book (ISBN, Title, Author, Price, Pages, Publisher) structure and store book details in a file and perform the following operations
  - a. Add book details
  - b. Search a book details for a given ISBN and display book details, if available
  - c. Update a book details using ISBN
  - d. Delete book details for a given ISBN and display list of remaining Books.

### Course Structure

**Class** : **B.Sc. Honours Mathematics / Physics / Chemistry**

**Semester** : **II**

<b>S. No</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Major / Minor</b>	<b>Teaching Hours per week</b>	<b>IA</b>	<b>SE E</b>	<b>Total Marks</b>	<b>Credits</b>
1	23CSMIL121	Problem Solving using C	Minor	4	30	70	100	3
2	23CSMIP121	Problem Solving using C	Minor	2	15	35	50	1



**Adusumilli Gopalakrishnaiah & Sugarcane Growers**  
**SIDDHARTHA DEGREE COLLEGE OF ARTS & SCIENCE**

Vuyyuru-521165, Krishna District, Andhra Pradesh

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An Autonomous college in the Jurisdiction of Krishna University

Accredited by NAAC "A" Grade \* ISO 9001:2015 Certified Institution

**PROBLEM SOLVING Using "C"**

**Offered to B.Sc. Honours (Mathematics / Physics / Chemistry) – Minor – II Semester**

<b>Course Code</b>	: <b>23CSMIL121</b>	No. Of Lecture Hours per week	:	4
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	30
Year of Revision	: New Course	SEE Marks	:	70
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	3

**Course Objective:**

This course aims to provide exposure to problem-solving through programming and introduce the concepts of the C Programming language.

**Course outcomes (based on BTL):**

- CO1. Understand Tokens and write basic C programs. (PO5)
- CO2. Understand control structures in C. (PO5)
- CO3. Understand arrays and strings and implement them.
- CO4. Understand the right way of using functions, pointers, and structures in C (PO5)
- CO5. Develop and test programs written in C files (PO5,PO7)

**Mapping of Course Outcomes (COs) with Programme Outcomes (POs) & PSOs:**

	CO-PO MATRIX							
	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
<b>23CSMAL121</b>	CO1					H		
	CO2					H		
	CO3					H		
	CO4					H		
	CO5					H		M

**Syllabus:**

Unit No	Syllabus Content	Lecture Hours
I	<b>Introduction to C:</b> Introduction – Structure of C Program, Writing the first C Program, File used in C Program, Compiling and Executing C Programs, Using Comments, Keywords, Identifiers, Basic Data Types in C, Variables, Constants, I/O Statements in C, Operators in C, Programming Examples.	12
II	<b>Decision Control and Looping Statements:</b> Introduction to Decision Control Statements, Conditional Branching Statements, Iterative Statements, Nested Loops, Break and Continue Statement, goto Statement.	12

III	<b>Arrays:</b> Introduction, Declaration of Arrays, accessing elements of the Array, Storing Values in Array, Operations on Arrays, one dimensional, two dimensional and multi-dimensional arrays, character handling and strings.	10
IV	<b>Functions:</b> Introduction, using functions, Function declaration/ prototype, Function definition, function call, return statement, Passing parameters, Scope of variables, Storage Classes, Recursive functions. <b>Structure:</b> Introduction, Nested Structures, Arrays of Structures, Structures and Functions, Unions.	12
V	<b>Pointers:</b> Understanding Computer Memory, Introduction to Pointers, declaring Pointer Variables, Pointer Expressions and Pointer Arithmetic, Null Pointers, Passing Arguments to Functions using Pointer, Pointer and Arrays, Memory Allocation in C Programs, Memory Usage, Dynamic Memory Allocation, Drawbacks of Pointers. <b>Files:</b> Introduction to Files, Using Files in C, Reading Data from Files, Writing Data to Files.	14

**Textbooks:**

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.

**Reference Books:**

1. Yashavant Kanetkar - Let Us 'C' – BPB Publications.

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**MODEL QUESTION PAPER FOR SEM END EXAMINATION 2023-24**

**23CSMIL121: Problem Solving using C**

**Offered to: B. Sc. Honours (Mathematics / Physics / Chemistry)**

**Max Marks: 70M**

**TIME: 3 Hrs**

**Section A**

**Answer all Questions**

**5 x 4=20M**

1. (A) Explain Structure of C. (CO1,L1)  
OR  
(B) Describe Keywords (CO1,L1)
2. (A) Write about break and continue statements (CO2,L1)  
OR  
(B) Write a c program to print 1 to 10 natural numbers. (CO2, L1)
3. (A) Summarize one dimensional array with suitable example. (CO3, L2)  
OR  
(B). Define a string with example program.(CO3, L1)
4. (A) What is scope of variables in functions. (CO4, L1)  
OR  
(B)Define a function and how to declare a function in c. (CO4, L1)
5. (A) Write about Reading data from files. (CO5, L1)  
OR  
(B) How to declare a pointer variable in c. (CO5, L1)

**Section B**

**Answer all Questions**

**5 x 10=50M**

6. (A) Explain Datatypes in c with example. (CO1,L1)  
OR  
(B) Explain about Input and Output statements in C. (CO1, L1)
7. (A) Summarize Looping statements in c with example.(CO2, L2)  
OR  
(B)Summarize iterative statements in c with example. (CO2, L2)
8. (A) Write a program for multiplication of 2 3x3 matrices. (CO3, L1)  
OR  
(B) Write a program by using string handling functions. (CO3, L1)
- 9 (A) Explain Storage Classes in c . (CO4, L2)  
OR  
(B) Explain 'array of structures'. (CO4, L2)
- 10 (A) Explain Dynamic memory allocation. (CO5, L2)  
OR  
(B) How to pass arguments to functions using pointers with example program.  
(CO5, L2)

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**PROBLEM SOLVING Using “C” LAB**  
**Offered to B.Sc. Honours (Mathematics / Physics / Chemistry) – Minor – II Semester**

<b>Course Code</b>	: <b>23CSMIP121</b>	No. Of Lecture Hours per week	: 2
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 15
Year of Revision	: New Course	SEE Marks	: 35
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

**Course Objective:**

This course aims to provide exposure to problem-solving through programming and introduce the concepts of the C Programming language.

**Course outcomes (based on BTL):**

- CO1: Demonstration of basic C programs using branching and iterative statements. (PO7)
- CO2: Perform Operations on Arrays. (PO5)
- CO3: Perform passing parameters to functions and recursive functions. (PO5)
- CO4: Demonstration of concept of pointers. (PO5)
- CO5: Demonstration of Structures and files in C program. (PO5)

**List of Programmes:**

- 1) Write a C program to check whether the given two numbers are equal, bigger or smaller?
- 2) Write a C program to perform arithmetic operations using Switch...case?
- 3) Write a program to find the sum of individual digits of a positive integer.
- 4) Write a program to check whether the given number is Armstrong or not.
- 5) Write a program to generate the first N terms of the Fibonacci sequence.
- 6) Write a program to find both the largest and smallest number in a list of integer values
- 7) Write a program that uses functions to add two matrices.
- 8) Write a program for multiplication of two n X n matrices.
- 9) Write a program to demonstrate refaction of parameters in swapping of two integer values using Call by Value & Call by Address.
- 10) Write a program to calculate factorial of given integer value using recursive functions.
- 11) Write a program to search an element in a given list of values.
- 12) Write a program to illustrate pointer arithmetic.
- 13) Write a program to sort a given list of integers in ascending order.
- 14) Write a program to calculate the salaries of all employees using Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary) structure.
  - a. DA is 30 % of Basic Pay
  - b. HRA is 15% of Basic Pay
  - c. Deduction is 10% of (Basic Pay + DA)
  - d. Gross Salary = Basic Pay + DA + HRA
  - e. Net Salary = Gross Salary - Deduction
- 15) Write a program to perform various string operations.
- 16) Write a program to read the data character by character from a file.
- 17) Write a program to create Book (ISBN, Title, Author, Price, Pages, Publisher) structure and store book details in a file and perform the following operations
  - a. Add book details
  - b. Search a book details for a given ISBN and display book details, if available
  - c. Update a book details using ISBN
  - d. Delete book details for a given ISBN and display list of remaining Books.

### Course Structure

**Class** : **B.Com Honours Computer Applications**

**Semester** : **II**

S. No	Course Code	Course Name	Major / Minor	Teaching Hours per week	IA	SE E	Total Marks	Credits
1	23CAMAL121	OFFICE AUTOMATION TOOLS	Major	3	30	70	100	3
2	23CAMAP121	OFFICE AUTOMATION TOOLS LAB	Major	2	15	35	50	1
3	23ITMIL121	Problem Solving in "C"	Minor	3	30	70	100	3
4	23ITMIP121	Problem Solving in "C" LAB	Minor	2	15	35	50	1



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**OFFICE AUTOMATION TOOLS**

**Offered to B.Com (Computer Applications) - Major – II Semester**

Course Code	: 23CAMAL121	No. Of Lecture Hours per week	:	3
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	30
Year of Revision	: New Course	SEE Marks	:	70
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	3

**Course Objectives:**

1. To understand basic knowledge in the various office automation tools.
1. To apply the basic concepts of internet and internet tools.
2. To analyze the concepts about Excel formulae in easy way.
3. To analyze the advanced features in Excel sort, filters and charts
4. To evaluating about Features of Power Point, templates and wizards adding sub headings, editing text, formatting text, using master slide.

**Learning Outcomes:**

The students will be able:

- Understand concept of Word Processor and use its features.
- To use the advanced features of Ms-Word to make day to day usage easier.
- To work comfortably with Ms-Excel Environment.
- To create work sheets and user advanced feature of Excel.
- To create make presentations and inserting multimedia in them.

**Course Outcomes:**

Course Outcome No	Upon successful completion of this course, the student will be able to	Program Educational objectives / Outcome No
CO1	Understand the in-depth training in use of office automation.	PO1, PO2
CO2	Apply and Develop spreadsheets.	PO1, PO2
CO3	Implement basic knowledge in the various office automation tools and its application in the various areas of business.	PO2, PO3
CO4	Evaluate the methods of Office automation leverages technology to optimize tasks, enhancing efficiency and productivity.	PO2, PO3
CO5	Create to improved collaboration, time savings, accuracy, and enhanced customer service.	PO2, PO3

**Mapping of Course Outcomes (COs) with Programme Outcomes (POs) & PSOs:**

	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
23CAMAL121	CO1	L	L					
	CO2	L	M					
	CO3		L	M				
	CO4		M	M				
	CO5		M	H				

**Syllabus:**

Unit No	Syllabus Content	Lecture Hours
I	<p><b>Introduction to MS Office &amp; MS Word:</b> MS-Word: Features of MS-Word, MS-Word Window components, working with formatted text, Shortcut keys, Formatting documents: Selecting text, Copying &amp; moving data, Formatting characters, changing cases, Paragraph formatting, Indents, Drop Caps Using format painter, Page formatting, Header &amp; footer, Bullets &amp; numbering, Tabs, Forming tables. Finding &amp; replacing text, go to (F5) command, proofing text (Spell-check, Auto correct),</p> <p><b>Case Study:</b></p> <ol style="list-style-type: none"> <li>1. Create a document to write a letter to the DM&amp;HO of the district complaining about Hygienic conditions in your area.</li> <li>2. Create a document to share your experience of your recent vacation with family.</li> </ol>	14
II	<p><b>MS Word Advanced features:</b> Difference between Wizard and Template - Customize the Quick Access Tool Bar - Macros: Purpose - Creating Macro - Using Macro - Storing Macro - Inserting pictures: From Computer, Online Pictures Insert 3d Models Insert Shapes Insert Text Box - Insert Equation, Hyperlinks, Tables Insert tables Mail merging, Printing documents, Tables Insert tables, Mathematical calculations on tables data. Insert Text Box etc.</p> <p><b>Case Study:</b></p> <ol style="list-style-type: none"> <li>1. Create a document to send holiday intimation to all the parents at time about Dasara Vacation.</li> <li>2. Create a document to create Time Table of you class using tables.</li> </ol>	12
III	<p><b>Introduction to MS Excel &amp; Its features:</b> MS-Excel: Excel Features, Spread sheets, workbooks, creating, saving &amp; editing a workbook, Renaming sheet, cell entries (numbers, labels, and formulas), spell check, find and replace, Adding and deleting rows and columns Filling series, fill with drag, data sort, Formatting worksheet, Functions and its parts, Some useful Functions in Excel (SUM, AVERAGE, COUNT, MAX,MIN, IF),</p> <p><b>Case Study:</b></p> <ol style="list-style-type: none"> <li>1. Create a worksheet with you class marks displaying total, average, top marks in the class and least marks in the class.</li> </ol>	12
IV	<p><b>Ms-Excel Advanced Features:</b> Cell referencing (Relative, Absolute, Mixed), What-if analysis, Introduction to charts: types of charts, creation of charts, printing a chart, printing worksheet - Sort - Filters - View Menu</p> <p><b>Case Study:</b></p> <ol style="list-style-type: none"> <li>1. Prepare a chart with height and weights of you class mates in at least 3 types of charts.</li> <li>2. Demonstrate the use of Filter with the attendance data of your class.</li> </ol>	12

V	<p><b>Ms-PowerPoint and its Applications:</b> MS-Power Point: Features of Power Point, Uses, components of slide, templates and wizards, using template, choosing an auto layout,using outlines, adding sub headings, editing text, formatting text, using master slide, adding slides, changing color scheme, changing background and shading, adding header and footer, adding cliparts and auto shapes. Various presentation, Working in slide sorter view(deleting, duplicating, rearranging slides), adding transition and animations to slide show, inserting music or sound on a slide, viewing slide show ,Printing slides.</p> <p><b>Case Study:</b> Prepare a presentation with your achievements and experiences in College</p>	10
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**Text Books:**

1. Computer Fundamentals-Pradeep.K.Sinha: BPBPublications.
2. Fundamentals of Computers -ReemaThareja, Oxford University Press India

**Reference Books:**

1. Fundamentals of Computer - V. Rajaraman, Printice Hell of India.
2. Introduction to Computers-Peter Norton McGraw-Hill.

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**MODEL QUESTION PAPER FOR SEM END EXAMINATION 2023-24**  
**23CAMAL121 : OFFICE AUTOMATION TOOLS**

**Max Marks: 70M    Offered to : B. Com Honours (Computer Applications)    TIME: 3 Hrs**

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**Section-A**

**ANSWER ALL QUESTIONS**

**5X4M=20M**

1. (A). Explain the MS-Word Features (CO1, L2)  
(OR)  
(B). Explain the concepts of page formatting, header and footer (CO1, L2)
2. (A). Compare between wizard and Template. (CO2, L2)  
(OR)  
(B). Explain how to insert 3d models and shapes (CO2, L2)
3. (A) Illustrate how to create, saving and editing workbook? (CO3, L1)  
(OR)  
(B). Demonstrate how to adding and deleting rows, columns. (CO3, L1)
4. (A). Explain cell referencing (Relative, Absolute, Mixed) (CO4, L2)  
(OR)  
(B) Demonstrate the steps in What-if analysis (CO4, L2)
5. (A) Explain the features of Power Point and its uses (CO5, L1)  
(OR)  
(B). Explain the components of slide (CO5, L1)

**Section-B**

**ANSWER THE FOLLOWING QUESTIONS**

**5X10M=50M**

6. (A) Explain shortcut keys, finding and replacing text (CO1, L2)  
(OR)  
(B) Explain selecting text, copying and moving data and formatting charters (CO1, L2)
7. (A) Illustrate how to hyperlink, tables and insert table components. (CO2, L2)  
(OR)  
(B) Explain how to create Macro, and how to use Macro (CO2, L2)
8. (A) Explain useful functions in Excel with examples (CO3, L1)  
(OR)  
(B) Explain how to renaming sheet, cell entries, spell check? (CO3, L1)
9. (A) Demonstrate the concept of types of charts (CO4, L2)  
(OR)  
(B) Demonstrate the of sort and filers with one suitable example? (CO4, L1)
10. (A) Explain the steps in slide sorter view (deleting, duplicating, rearranging slides)  
(CO5, L1)  
(OR)  
(B) How to add transition and animation to slide show, and how to insert music and sound on a slide (CO5, L1)

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**OFFICE AUTOMATION TOOLS**  
**Offered to B.Com (Computer Applications) - Major – II Semester**

<b>Course Code</b>	: <b>23CAMAP121</b>	No. Of Lecture Hours per week	:	2
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	:	30
Year of Offering	: 2023-24	CIA Marks	:	15
Year of Revision	: New Course	SEE Marks	:	35
Percentage of Revision	: 0%	Total Marks	:	50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	1

**LIST OF EXPERIMENTS**

- 1) Design a visiting card for Managing Director of a company as per the following specification.
  - Size of visiting card is 32×2
  - Name of the company with big font
  - Phone number, Fax number and E-mail address with appropriate symbols.
  - Office and Residence address separated by a line
  
- 2) Create a table with following columns and display the result in separate cells for the following
  - Emp Name, Basic pay, DA, HRA, Total salary.
  - Sort all the employees in ascending order with the name as the key
  - Calculate the total salary of the employee
  - Calculate the Grand total salary of the employee
  - Finding highest salary and
  - Find lowest salary
  
- 3) Prepare an advertisement to company requiring software professional with the following
  - Attractive page border
  - Design the name of the company using WordArt
  - Use at least one clipart.
  - Give details of the company (use bullets etc)
  - Give details of the Vacancies in each category of employee's (Business manager, Software engineers, System administrators, Programmers, Data entry operators)
  - qualification required.
  
- 4) Create a letter having following specifications
  - Name of the company on the top of the page with big font and good style
  - Phone no, Fax no and E-mail address with symbols.
  - Main products manufactured by the company
  - Slogans if any should be specify in bold at the bottom
  
- 5) Create two pages of curriculum vitae of a graduate with the following specifications
  - Table to show qualifications with proper headings
  - Appropriate left and right margins
  - Format 1/2 page using two-column approach about yourself
  - Name on each page at the top right side
  - Page no. in the footer on the right side.

6) Write a macro format documents below

- Linespacing"2" (double)
- Paragraphindentof0.1
- Justification formatting style
- Arial font and Bold of 14pt-size

7) Create a letter as the main document and create 10 records for the 10 persons User mail merge to create letter for selected persons among 10.

8) Create an electronic spread sheet in which you enter the following decimal numbers and convert them into octal, Hexa decimal and binary numbers and vice-versa.

**Decimal Numbers:**35,68,95,78,165,225,355,375,465

**Binary Numbers:** 101,1101,11101,11111,10001,11101111

9) Calculate the net pay of the employees following the conditions below.

	A	B	C	D	E	F	G	H	I
1	Employee name	Employee id	Basic	DA	HRA	GPF	Gross Pay	Income	Net Worth

DA:-56% of the basic pay if Basic pay is greater than 20000 or else 44%.

HRA:-15% of the Basic pay subject to maximum of Rs.4000.

GPF: -10% of the basic pay.

INCOMETAX:-10% of basic if Basic pay is greater than 20000.

Find who is getting highest salary & who is get lowest salary?

10) The ABC Company shows the sales of different product For 5 years. Create BAR Graph, 3D and Pie chart for the following.

A	B	C	D	E	F
S.No.	Year	Pro1	Pro2	Pro3	Pro4
1	1989	1000	800	90	1000
2	1990	800	80	50	900
3	1991	1200	190	40	800
4	1992	400	200	30	1000
5	1993	1800	400	40	1200

11) Create a suitable examination data base and find the sum of the marks (total) of each student and respective, class secured by the student.

**Pass:** if marks in each subject $\geq$ 35

**Distinction:** if average $\geq$ 75

**First class:** if average $\geq$ 60but $<$ 75

**Second class:** if average $\geq$ 50but less than60

**Third class:** if average $\geq$ 35but less than50

**Fail:** if marks in any subject $<$ 35

12) Enter the following data into the sheet.

Name	Department	Salary
Anusha	Accounts	12000
Rani	Engineering	24000
Lakshmi	Accounts	9000
Purnima	Marketing	20000
Bindu	Accounts	4500



Tejaswi	Accounts	11000
Swetha	Engineering	15000
Saroja	Marketing	45000
Sunitha	Accounts	5600
Sandhya	Engineering	24000
Harika	Marketing	8000

- Extract records for department tin Accounts and Salary > 10000
- Sort the data by salary with the department using "sort commands".
- Calculate total salary for a ch department using Subtotals

13) Enter the following data in to the sheet..

	<b>Raju</b>	<b>Rani</b>	<b>Mark</b>	<b>Rosy</b>	<b>Ismail</b>	<b>Reshma</b>
<b>English</b>	76	89	43	51	76	87
<b>2ndLang</b>	55	85	78	61	47	33
<b>Maths</b>	65	82	34	58	52	65
<b>Computers</b>	45	91	56	72	49	56
<b>Human Values</b>	51	84	54	64	32	64

**Apply the conditional formatting for marks**

- 35 below Red
- 35 to 50 Blue
- 51 to 70 Green
- 71 to 100 Yellow

14) Create a presentation using templates.

15) Create a Custom layout or Slide Master for professional presentation.

16) Create a presentation with slide transitions and animation effects.

17) Create a table in PPT and apply graphical representation.

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**Problem Solving in "C"**

**Offered to B.Com (Computer Applications) – Minor – II Semester**

Course Code	: 23ITMIL121	No. Of Lecture Hours per week	:	3
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	30
Year of Revision	: New Course	SEE Marks	:	70
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	3

**LEARNING OUTCOMES:**

Upon successful completion of the course, a student will be able to:

1. Understand the functionality of a Digital Computer and fundamental constructs of programming.
2. Analyse and develop solutions to a given problem using control statements.
3. Work with arrays and textual information.
4. Understand the concept of functional hierarchical code organization.
5. Gain knowledge on derived data types and file handling.

Unit No	Syllabus Content	Lecture Hours
I	<b>Introduction to Computer and Programming:</b> Introduction, Block diagram of a computer, Hardware and Software, Generations of Programming Languages, Algorithms, Flowcharts. <b>Introduction to C:</b> Introduction, Structure of C Program, Writing the first C Program, File used in C Program, Compiling and Executing C Programs, Using Comments, Keywords, Identifiers, Basic Data Types in C, Variables, Constants, I/O Statements in C, Operators in C.	14
II	<b>Decision making statements:</b> if, else if, else if ladder, switch statements <b>Loop Control Statements:</b> while, do-while, for loop; break, continue and goto statements.	10
III	<b>Arrays:</b> Introduction, One Dimensional Arrays, Declaration, Initialization and Memory representation, Two Dimensional Arrays, Declaration, Initialization and Memory Representation. <b>Strings:</b> Declaring and Initializing string variables, character and string handling functions.	11
IV	<b>Functions:</b> Introduction, Function declaration, prototype, Function definition, function call, return statement, Categories of functions, Recursion, Parameter Passing techniques, Scope of variables, Storage Classes. <b>Pointers:</b> Introduction to Pointers, declaring and initializing pointer Variables, accessing values using pointers, Pointer Arithmetic, Dynamic Memory Allocation.	13

V	<p><b>Structures and Unions:</b> Introduction, Structure definition, accessing structure members, Array of Structures, union definition, difference between structures and unions.</p> <p><b>Files:</b> Introduction to Files, Using Files in C, Reading Data from Files, Writing Data to Files, Detecting the End-of-file, Accepting Command Line Arguments.</p>	12
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**TEXT BOOKS:**

1. E. Balagurusamy, Programming in ANSI C, Tata McGraw Hill Publications
2. Computer Fundamentals and Programming in C, Reema Thareja, Oxford University Press

**REFERENCE BOOKS:**

1. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language – Pearson Publications.
2. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
3. Yashavant Kanetkar - Let Us 'C' – BPB Publications.

**SUGGESTED CO-CURRICULAR ACTIVITIES:**

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
  - a. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
  - b. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

**MODEL QUESTION PAPER FOR SEM END EXAMINATION 2023-24**  
**23ITMIL121: Problem Solving in C                      Max Marks: 70M                      TIME: 3 Hrs**

**Section A**

**Answer all Questions**

**5 x 4=20M**

1. (A) Explain Structure of C. (CO1,L1)  
OR  
(B) Describe Keywords (CO1,L1)
2. (A) Write about break and continue statements (CO2,L1)  
OR  
(B) Write a c program to print 1 to 10 natural numbers. (CO2, L1)
3. (A) Summarize one dimensional array with suitable example. (CO3, L2)  
OR  
(B). Define a string with example program.(CO3, L1)
4. (A) What is scope of variables in functions. (CO4, L1)  
OR  
(B) Define a function and how to declare a function in c . (CO4, L1)
5. (A) Write about Reading data from files. (CO5, L1)  
OR  
(B) How to declare a pointer variable in c. (CO5, L1)

**Section B**

**Answer all Questions**

**5 x 10=50M**

6. (A) Explain Datatypes in c with example. (CO1,L1)  
OR  
(B) Explain about Input and Output statements in C. (CO1, L1)
7. (A) Summarize Looping statements in c with example.(CO2, L2)  
OR  
(B) Summarize iterative statements in c with example. (CO2, L2)
8. (A) Write a program for multiplication of 2 3x3 matrices. (CO3, L1)  
OR  
(B) Write a program by using string handling functions. (CO3, L1)
9. (A) Explain Storage Classes in c . (CO4, L2)  
OR  
(B) Explain 'array of structures'. (CO4, L2)
- 10 (A) Explain Dynamic memory allocation. (CO5, L2)  
OR  
(B) How to pass arguments to functions using pointers with example program.  
(CO5, L2)

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**Problem Solving in “C” Lab**  
**Offered to B.Com (Computer Applications) – Minor – II Semester**

<b>Course Code</b>	: 23ITMIP121	No. Of Lecture Hours per week	: 2
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 15
Year of Revision	: New Course	SEE Marks	: 35
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

**LIST OF EXPERIMENTS**

1. Write a program to find the area of circle and triangle.
2. Write a program to find simple and compound interest.
3. Write a program to convert temperature from Celsius to Fahrenheit
4. Write a program to find whether a number is even or odd
5. Write a program to find sum and average of 5 numbers
6. Write a program to check whether the given number is Armstrong or not.
7. Write a program to find the sum of individual digits of a positive integer.
8. Write a program to generate the first n terms of the Fibonacci sequence.
9. Write a program to find both the largest and smallest number in a list of integer values
10. Write a program to calculate factorial of given integer value using recursive functions
11. Write a program for addition of two matrices.
12. Write a program for multiplication of two matrices.
13. Write a program to perform various string operations.
14. Write a program to search an element in a given list of values.
15. Write a C program to write and read data into/from a File.

### Course Structure

**Class** : **B.C.A. Honours**

**Semester** : **II**

S. No	Course Code	Course Name	Major / Minor	Teaching Hours per week	IA	SE E	Total Marks	Credits
1	23BCMAL121	OFFICE AUTOMATION TOOLS	Major	3	30	70	100	3
2	23BCMAP121	OFFICE AUTOMATION TOOLS LAB	Major	2	15	35	50	1
3	23BCMAL122	PROGRAMMING IN 'C'	Major	3	30	70	100	3
4	23BCMAL122	PROGRAMMING IN 'C' LAB	Major	2	15	35	50	1
5	23DSMIL121	PYTHON PROGRAMMING	Minor	4	30	70	100	3
6	23DSMIP121	PYTHON PROGRAMMING LAB	Minor	2	15	35	50	1



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**OFFICE AUTOMATION TOOLS**

**Offered to B.C.A. Honours – Major – II Semester**

<b>Course Code</b>	: <b>23BCMAL121</b>	No. Of Lecture Hours per week	:	3
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	30
Year of Revision	: New Course	SEE Marks	:	70
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	3

**Course Objectives:**

1. To understand basic knowledge in the various office automation tools.
1. To apply the basic concepts of internet and internet tools.
2. To analyze the concepts about Excel formulae in easy way.
3. To analyze the advanced features in Excel sort, filters and charts
4. To evaluating about Features of Power Point, templates and wizards adding sub headings, editing text, formatting text, using master slide.

**Course Outcomes:**

Course Outcome No	Upon successful completion of this course, the student will be able to	Program Educational objectives / Outcome No
CO1	Understand the in-depth training in use of office automation.	PO1, PO2
CO2	Apply and Develop internet and internet tools.	PO1, PO2
CO3	Implement this course aims to acquire basic knowledge in the various office automation tools and its application in the various areas of business.	PO2, PO3
CO4	Evaluate the methods of Office automation leverages technology to optimize tasks, enhancing efficiency and productivity.	PO2, PO3
CO5	Create to improved collaboration, time savings, accuracy, and enhanced customer service.	PO2, PO3

**Mapping of Course Outcomes (COs) with Programme Outcomes (POs) & PSOs:**

	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
<b>23BCMAL121</b>	CO1	L	L					
	CO2	L	M					
	CO3		L	M				
	CO4		M	M				
	CO5		M	H				

### Course Objectives:

- The objective of this course is to help students to acquire knowledge on the environment of GUI in Ms-Word and its features.
- To introduce the fundamentals concepts of using Ms-Word and its features to make it more useful
- To provide hands on use of Word, Excel and PowerPoint.

### Learning Outcomes:

The students will be able:

- Understand concept of Word Processor and use its features.
- To use the advanced features of Ms-Word to make day to day usage easier.
- To work comfortably with Ms-Excel Environment.
- To create work sheets and user advanced feature of Excel.
- To create make presentations and inserting multimedia in them.

### Syllabus:

Unit No	Syllabus Content	Lecture Hours
I	<b>Introduction to MS Office &amp; MS Word:</b> MS-Word: Features of MS-Word, MS-Word Window components, working with formatted text, Shortcut keys, Formatting documents: Selecting text, Copying & moving data, Formatting characters, changing cases, Paragraph formatting, Indents, Drop Caps Using format painter, Page formatting, Header & footer, Bullets & numbering, Tabs, Forming tables. Finding & replacing text, go to (F5) command, proofing text (Spell-check, Auto correct), <b>Case Study:</b> 1. Create a document to write a letter to the DM&HO of the district complaining about Hygienic conditions in your area. 2. Create a document to share your experience of your recent vacation with family.	12
II	<b>MS Word Advanced features:</b> Difference between Wizard and Template - Customize the Quick Access Tool Bar - Macros: Purpose - Creating Macro - Using Macro - Storing Macro - Inserting pictures: From Computer, Online Pictures Insert 3d Models Insert Shapes Insert Text Box - Insert Equation, Hyperlinks, Tables Insert tables Mail merging, Printing documents, Tables Insert tables, Mathematical calculations on tables data. Insert Text Box etc. <b>Case Study:</b> 1. Create a document to send holiday intimation to all the parents at time about Dasara Vacation. 2. Create a document to create Time Table of you class using tables.	12
III	<b>Introduction to MS Excel &amp; Its features:</b> MS-Excel: Excel Features, Spread sheets, workbooks, creating, saving & editing a workbook, Renaming sheet, cell entries (numbers, labels, and formulas), spell check, find and replace, Adding and deleting rows and columns Filling series, fill with drag, data sort, Formatting worksheet, Functions and its parts, Some useful Functions in Excel (SUM, AVERAGE, COUNT, MAX, MIN, IF), <b>Case Study:</b> 1. Create a worksheet with you class marks displaying total, average, top marks in the class and least marks in the class.	12



IV	<p><b>Ms-Excel Advanced Features:</b> Cell referencing (Relative, Absolute, Mixed), What-if analysis, Introduction to charts: types of charts, creation of charts, printing a chart, printing worksheet - Sort - Filters - View Menu</p> <p><b>Case Study:</b></p> <p>1. Prepare a chart with height and weights of you class mates in at least 3 types of charts. 2. Demonstrate the use of Filter with the attendance data of your class.</p>	12
V	<p><b>Ms-PowerPoint and its Applications:</b> MS-Power Point: Features of Power Point, Uses, components of slide, templates and wizards, using template, choosing an auto layout,using outlines, adding sub headings, editing text, formatting text, using master slide, adding slides, changing color scheme, changing background and shading, adding header and footer, adding cliparts and auto shapes. Various presentation, Working in slide sorter view(deleting, duplicating, rearranging slides), adding transition and animations to slide show, inserting music or sound on a slide, viewing slide show ,Printing slides.</p> <p><b>Case Study:</b></p> <p>1. Prepare a presentation with your achievements and experiences in College.</p>	12

**Text Books:**

1. Computer Fundamentals-Pradeep.K.Sinha: BPBPublications.
2. Fundamentals of Computers -ReemaThareja, Oxford University Press India

**Reference Books:**

1. Fundamentals of Computer - V. Rajaraman, Printice Hell of India.
2. Introduction to Computers-Peter Norton McGraw-Hill.

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**MODEL QUESTION PAPER FOR SEM END EXAMINATION 2023-24**  
**23BCMAL121 : OFFICE AUTOMATION TOOLS**

**Max Marks: 70M**

**Offered to : B. C. A HONOURS**

**TIME: 3 Hrs**

**Section-A**

**ANSWER ALL QUESTIONS**

**5X4M=20M**

1. (A). Explain the MS-Word Features (CO1, L2)  
(OR)  
(B). Explain the concepts of page formatting, header and footer (CO1, L2)
2. (A). Compare between wizard and Template. (CO2, L2)  
(OR)  
(B). Explain how to insert 3d models and shapes (CO2, L2)
3. (A) Illustrate how to create, saving and editing workbook? (CO3, L1)  
(OR)  
(B). Demonstrate how to adding and deleting rows, columns. (CO3, L1)
4. (A). Explain cell referencing (Relative, Absolute, Mixed) (CO4, L2)  
(OR)  
(B) Demonstrate the steps in What-if analysis (CO4, L2)
5. (A) Explain the features of Power Point and its uses (CO5, L1)  
(OR)  
(B). Explain the components of slide (CO5, L1)

**Section-B**

**ANSWER THE FOLLOWING QUESTIONS**

**5X10M=50M**

6. (A) Explain shortcut keys, finding and replacing text (CO1, L2)  
(OR)  
(B) Explain selecting text, copying and moving data and formatting charters (CO1, L2)
7. (A) Illustrate how to hyperlink, tables and insert table components. (CO2, L2)  
(OR)  
(B) Explain how to create Macro, and how to use Macro (CO2, L2)
8. (A) Explain useful functions in Excel with examples (CO3, L1)  
(OR)  
(B) Explain how to renaming sheet, cell entries, spell check? (CO3, L1)
9. (A) Demonstrate the concept of types of charts (CO4, L2)  
(OR)  
(B) Demonstrate the of sort and filers with one suitable example? (CO4, L1)
10. (A) Explain the steps in slide sorter view (deleting, duplicating, rearranging slides)  
(CO5, L1)  
(OR)  
(B) How to add transition and animation to slide show, and how to insert music and sound on a slide (CO5, L1)

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**OFFICE AUTOMATION TOOLS LAB**  
**Offered to: B.C.A. Honours – II Semester**

<b>Course Code</b>	: <b>23BCMAP121</b>	No. Of Lecture Hours per week	: 2
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 15
Year of Revision	: New Course	SEE Marks	: 35
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

**LIST OF EXPERIMENTS**

- 1) Design a visiting card for Managing Director of a company as per the following specification.
  - Size of visiting card is 32×2
  - Name of the company with big font
  - Phone number, Fax number and E-mail address with appropriate symbols.
  - Office and Residence address separated by a line
  
- 2) Create a table with following columns and display the result in separate cells for the following
  - Emp Name, Basic pay, DA, HRA, Total salary.
  - Sort all the employees in ascending order with the name as the key
  - Calculate the total salary of the employee
  - Calculate the Grand total salary of the employee
  - Finding highest salary and
  - Find lowest salary
  
- 3) Prepare an advertisement to a company requiring software professional with the following
  - Attractive page border
  - Design the name of the company using WordArt
  - Use at least one clipart.
  - Give details of the company (use bullets etc)
  - Give details of the Vacancies in each category of employee's (Business manager, Software engineers, System administrators, Programmers, Data entry operators)
  - qualification required.
  
- 4) Create a letter having following specifications
  - Name of the company on the top of the page with big font and good style
  - Phone no, Fax no and E-mail address with symbols.
  - Main products manufactured by the company
  - Slogans if any should be specified in bold at the bottom
  
- 5) Create two pages of curriculum vitae of a graduate with the following specifications
  - Table to show qualifications with proper headings
  - Appropriate left and right margins
  - Format 1/2 page using two-column approach about yourself
  - Name on each page at the top right side
  - Page no. in the footer on the right side.

6) Write a macro format documents below

- Linespacing"2" (double)
- Paragraphindentof0.1
- Justification formatting style
- Arial font andBoldof14pt-size

7) Create a letter as the main document and create 10 records for the 10 persons User mail merge to create letter for selected persons among 10.

8) Create an electronic spread sheet in which you enter the following decimal numbers and convert them into octal, Hexa decimal and binary numbers and vice-versa.

**Decimal Numbers:** 35,68,95,78,165,225,355,375,465

**Binary Numbers:** 101,1101,11101,11111,10001,11101111

9) Calculate the net pay of the employees following the conditions below.

	A	B	C	D	E	F	G	H	I
1	Employee name	Employee id	Basic	DA	HRA	GPF	Gross Pay	Income	Net Worth

DA:-56%ofthebasicpayifBasicpayisgreaterthan20000 orelse44%.

HRA:-15%oftheBasicpaysubjecttomaximumofRs.4000.

GPF: -10%ofthebasicpay.

INCOMETAX:-10%ofbasicifBasicpayis greaterthan20000.

Find who is getting highest salary & who is get lowest salary?

10) The ABC Company shows the sales of different product For5years.CreateBARGraph, 3D and Pie chart for the following.

A	B	C	D	E	F
S.No.	Year	Pro1	Pro2	Pro3	Pro4
1	1989	1000	800	90	1000
2	1990	800	80	50	900
3	1991	1200	190	40	800
4	1992	400	200	30	1000
5	1993	1800	400	40	1200

11) Create a suitable examination data base and find the sum of the marks (total) of each student and respective, class secured by the student.

**Pass:** if marks in each subject $\geq$ 35

**Distinction:** if average $\geq$ 75

**First class:** if average $\geq$ 60but $<$ 75

**Second class:** if average $\geq$ 50butlessthan60

**Third class:** if average $\geq$ 35butlessthan50

**Fail:** if marks in any subject $<$ 35

12) Enter the following data into the sheet.

Name	Department	Salary
Anusha	Accounts	12000
Rani	Engineering	24000
Lakshmi	Accounts	9000
Purnima	Marketing	20000
Bindu	Accounts	4500

Tejaswi	Accounts	11000
Swetha	Engineering	15000
Saroja	Marketing	45000
Sunitha	Accounts	5600
Sandhya	Engineering	24000
Harika	Marketing	8000

- Extract records for department tin Accounts and Salary > 10000
- Sort the data by salary with the department using "sort commands".
- Calculate total salary for a ch department using Subtotals

13) Enter the following data in to the sheet..

	<b>Raju</b>	<b>Rani</b>	<b>Mark</b>	<b>Rosy</b>	<b>Ismail</b>	<b>Reshma</b>
<b>English</b>	76	89	43	51	76	87
<b>2ndLang</b>	55	85	78	61	47	33
<b>Maths</b>	65	82	34	58	52	65
<b>Computers</b>	45	91	56	72	49	56
<b>Human Values</b>	51	84	54	64	32	64

**Apply the conditional formatting for marks**

- 35 below Red
- 35 to 50 Blue
- 51 to 70 Green
- 71 to 100 Yellow

14) Create a presentation using templates.

15) Create a Custom layout or Slide Master for professional presentation.

16) Create a presentation with slide transitions and animation effects.

17) Create a table in PPT and apply graphical representation.

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**Programming In 'C'**  
**Offered to B.C.A. Honours – Major – II Semester**

Course Code	: 23BCMAL122	No. Of Lecture Hours per week	:	3
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	30
Year of Revision	: New Course	SEE Marks	:	70
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	3

**Course Objective:**

This course aims to provide exposure to problem-solving through programming and introduce the concepts of the C Programming language.

**Course outcomes (based on BTL):**

- CO1. Understand Tokens and write basic C programs. (PO5)
- CO2. Understand control structures in C. (PO5)
- CO3. Understand arrays and strings and implement them. (PO5)
- CO4. Understand the right way of using functions, pointers, and structures in C (PO5)
- CO5. Develop and test programs written in C files (PO5, PO7)

**Mapping of Course Outcomes (COs) with Programme Outcomes (POs) & PSOs**

	CO-PO MATRIX							
	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
<b>23BCMAL122</b>	CO1					H		
	CO2					H		
	CO3					H		
	CO4					H		
	CO5					H		M

**Syllabus**

Unit No	Syllabus Content	Lecture Hours
I	<p><b>Introduction to Algorithms and Programming Languages:</b> Algorithm - Key features of Algorithms - examples of Algorithms, Flow Charts– Pseudo code, Programming Languages – Generation of Programming Languages – Structured Programming Language.</p> <p><b>Introduction to C:</b> Introduction – Structure of C Program, Writing the first C Program, File used in C Program – Compiling and Executing C Programs, Using Comments – Keywords – Identifiers, Basic Data Types in C, Variables – Constants, I/O Statements in C, Operators in C, Programming Examples, Type Conversion and Type Casting.</p>	16

II	<p><b>Control Structures and Functions:</b> Decision Control and Looping Statements: Introduction to Decision Control Statements, Conditional Branching Statements, Iterative Statements, Nested Loops, Break and Continue Statement – Go to Statement.</p> <p><b>Functions:</b> Introduction, Using functions – Function declaration/prototype – Function definition, Function call – Return statement – Passing parameters, Scope of variables, Storage Classes, Recursive functions.</p>	12
III	<p><b>Arrays:</b> Introduction, Declaration of Arrays, accessing elements of the Array – Storing Values in Array, Calculating the length of the Array, Operations that can be performed on Array, Passing one dimensional array to function. Two dimensional Arrays, accessing two dimensional arrays, Passing two dimensional arrays to functions.</p> <p><b>Strings:</b> Introduction, String Operations using String functions.</p>	10
IV	<p><b>Pointers:</b> Understanding Computer Memory – Introduction to Pointers, Declaring Pointer Variable, Pointer Expressions and Pointer Arithmetic – Null Pointers, Passing Arguments to Functions using Pointer, Pointer and Arrays – Passing Array to Function, Memory Allocation in C Programs, Memory Usage – Dynamic Memory Allocation, Drawbacks of Pointers.</p> <p><b>Structures:</b> Introduction to structures, Nested Structures.</p> <p><b>Union, and Enumerated Data Types:</b> Introduction to Union – accessing union elements, Enumerated Data Types.</p>	12
V	<p><b>File Handling:</b> Files: Introduction to Files, Using Files in C, Reading Data from Files, Writing Data from Files, Detecting the End-of-file, Error Handling during File Operations.</p>	10

**Textbooks:**

Computer Fundamentals and Programming in C by REEMA THAREJA from OXFORD UNIVERSITY PRESS

**Reference Books:**

1. E Balagurusamy, COMPUTING FUNDAMENTALS & C PROGRAMMING – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.

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**MODEL QUESTION PAPER FOR SEM END EXAMINATION 2023-24**  
**23BCMAL122: Programming in C**                      **Max Marks: 70M**                      **TIME: 3 Hrs**  
**Section A**

**Answer all Questions**

**5 x 4=20M**

1. (A) Explain Structure of C. (CO1,L1)  
OR  
(B) Describe Keywords (CO1,L1)
2. (A) Write about break and continue statements (CO2,L1)  
OR  
(B) Write a c program to print 1 to 10 natural numbers. (CO2, L1)
3. (A) Summarize one dimensional array with suitable example. (CO3, L2)  
OR  
(B). Define a string with example program.(CO3, L1)
4. (A) What is scope of variables in functions. (CO4, L1)  
OR  
(B) Define a function and how to declare a function in c . (CO4, L1)
5. (A) Write about Reading data from files. (CO5, L1)  
OR  
(B) How to declare a pointer variable in c. (CO5, L1)

**Section B**

**Answer all Questions**

**5 x 10=50M**

6. (A) Explain Datatypes in c with example. (CO1,L1)  
OR  
(B) Explain about Input and Output statements in C. (CO1, L1)
7. (A) Summarize Looping statements in c with example.(CO2, L2)  
OR  
(B) Summarize iterative statements in c with example. (CO2, L2)
8. (A) Write a program for multiplication of 2 3x3 matrices. (CO3, L1)  
OR  
(B) Write a program by using string handling functions. (CO3, L1)
9. (A) Explain Storage Classes in c . (CO4, L2)  
OR  
(B) Explain 'array of structures'. (CO4, L2)
- 10 (A) Explain Dynamic memory allocation. (CO5, L2)  
OR  
(B) How to pass arguments to functions using pointers with example program.  
(CO5, L2)

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**Programming In 'C' Lab**  
**Offered to B.C.A. Honours – Major – II Semester**

<b>Course Code</b>	: <b>23BCMAP122</b>	No. Of Lecture Hours per week	: 2
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 15
Year of Revision	: New Course	SEE Marks	: 35
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

**Course Objective:**

This course aims to provide exposure to problem-solving through programming and introduce the concepts of the C Programming language.

**Course outcomes (based on BTL):**

- CO1: Demonstration of basic C programs using branching and iterative statements. (PO7)
- CO2: Perform Operations on Arrays. (PO5)
- CO3: Perform passing parameters to functions and recursive functions. (PO5)
- CO4: Demonstration of concept of pointers. (PO5)
- CO5: Demonstration of Structures and files in C program. (PO5)

**List of the Practicals**

1. Write a C program to calculate the expression:  $((a*b)/c)+(a+b-c)$ .
2. Write a C program to calculate  $(a+b+c)^3$ .
3. Write a C program to check whether the given number is Prime or Not.
4. Write a C program to find the sum of individual digits of a given number.
5. Program to convert Hours into seconds.
6. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
7. Write a program to check whether the given number is Palindrome or Not.
8. Write a C program to check whether a given 3-digit number is an Armstrong number or not.
9. Write a C program to print the numbers in triangular form.
 

```

1
1 2
1 2 3
1 2 3 4
      
```
10. Program to display the number of days in a given month using Switch – Case.
11. Write a C program to perform the following:
  - I. Addition of two matrices.
  - II. Multiplication of two matrices.
12. Write a C program to determine if the given string is a palindrome or not.
13. Write C program to find the factorial of a given integer using a recursive function.
14. Write a C program to concatenate two strings using pointers.
15. Write a C program to find the length of a string using pointers.
16. Program to display Student Details using Structures.
17. Write a C program to 1. Write data into a file, 2. Read data from a file



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**PYTHON PROGRAMMING**

**Offered to B.C.A. Honours – Minor – II Semester**

Course Code	: 23DSMIL121	No. Of Lecture Hours per week	:	4
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	:	60
Year of Offering	: 2023-24	CIA Marks	:	30
Year of Revision	: New Course	SEE Marks	:	70
Percentage of Revision	: 0%	Total Marks	:	100
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	:	3

**Course Objective:**

After taking the course, students will be able to use Python program a Scripting language and Exposure of various problems solving approaches of computer

**Course Outcomes:**

COURSE OUTCOME NO	Upon successful completion of this course, the student will be able to	PROGRAM OUTCOME NO
CO1	Learn about concepts of programming and python	PO1, PO2
CO2	Understand the Decision making and looping controls available in Python Programs	PO2, PO3
CO3	Determine the process of using functions and modules	PO3, PO4
CO4	Implement the Data structures using Lists, Tuple, Dictionaries	PO4, PO3
CO5	Interpret the OOPs concept in Python.	PO5, PO3

**CO-PO MAPPING MATRIX**

	CO - PO	PO1	PO2	PO3	PO4	PO5	PO6
<b>23AIMIL12 1</b>	CO1	H	M				
	CO2		H	M			
	CO3			H	L		
	CO4			L	H		
	CO5			H		L	

**Syllabus:**

Unit No	Syllabus Content	Lecture Hours
I	<b>Introduction, Data types, Operators:</b> <b>Introduction to Programming:</b> Languages, Generations, Programming Paradigms, Debugging and Testing Approaches. <b>Python :</b> Introduction, History of Python, Features of Python, Writing and executing python programs, constants, variables, reserved words, input operation, indentation, <b>Data types in python:</b> integer, string, Boolean, Operators and expressions.	12

II	<b>Decision making and looping</b> <b>Control Flow: Selection or conditional branching</b> : if, if-else, if-elif- else, nested if. <b>Loop or iterative statements:</b> for, while, break, continue, pass. Example programs on control flow.	13
III	<b>Functions and Modules:</b> Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Lambda or Anonymous Functions, Global and Local Variables. <b>Modules:</b> Creating modules, import statement, from import statement.	12
IV	<b>Data Structures:</b> <b>Lists</b> : Creation, accessing values, updating values, list operations, list methods. <b>Tuple:</b> tuple creation, accessing values, deleting values, tuple operations. <b>Sets:</b> creation, set operations. <b>Dictionaries:</b> creation, accessing values, adding , modifying , deleting items, built-in dictionary methods.	13
V	<b>Object Oriented Programming in Python:</b> Introduction to OOP, Features of OOP, Merits and Demerits, Classes and Objects, Class method and self-Argument, Public and Private , the init method(constructor), Inheritance, polymorphism and Method Overriding. <b>Error and Exception handling:</b> Handling Exception using try-except block, Raising Exceptions, User Defined Exceptions.	10

### **TEXT BOOKS**

Python Programming: Using Problem Solving approach, Reema Thareja, Oxford University Press 2017

### **REFERENCE BOOKS:**

Python Programming, A Modern Approach, Vamsi Kurama, Pearson Publications, 2017

### **Recommended Co – Curricular Activities:**

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

#### **A. Measurable**

- a. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging).
- b. Student seminars (on topics of the syllabus and related aspects (individual activity))
- c. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
- d. Study projects (by very small groups of students on selected local real- time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

#### **B. General**

- a. Group Discussion
- b. Others

**RECOMMENDED CONTINUOUS ASSESSMENT METHODS:**

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports.
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.

**MODEL PAPER**

**TITLE: Python Programming COURSE CODE: 23AIMIL121**

**SECTION: B.C.A. Honours MINOR SEMESTER: II**

**TIME: 3 Hrs.**

**MAX: 70M**

NOTE TO PAPER SETTER: IN SECTION A & SECTION B, FOR EACH QUESTION ONE SUB QUESTION (A) MUST BE A PROGRAM MEANT FOR LOGICAL TESTING AND ANOTHER SUB QUESTION (B) IS MEANT FOR DESCRIPTIVE / LOGICAL.

**SECTION A**

**ANSWER THE FOLLOWING QUESTIONS.**

**5 X 4 = 20 Marks**

1. a) Write different types of programming paradigms. (CO1, L1)  
OR  
b) Develop a python code to print sum and average marks of three subjects of a student. (CO1, L1)
2. a) Write a python program to find the factorial of a given number. (CO2, L1)  
OR  
b) Explain if-elif-else statement in python with example (CO2, L2)
3. a) Develop a python program for Lambda function. (CO3, L3)  
OR  
b) Explain about global and local variables in python. (CO3, L2)
4. a) Develop a python program to insert elements into a list, remove elements from a list and sort elements of the list. (CO4, L3)  
OR  
b) Compare lists and tuples in python. (CO4, L3)
5. a) Develop a python program to demonstrate Inheritance. (CO5, L3)  
OR  
b) Explain about classes and objects in python. (CO5, L2)

**SECTION B**

**ANSWER THE FOLLOWING QUESTIONS .5 X 10 = 50 Marks**

6. a) List and explain data types in python. (CO1, L2)  
OR  
b) Write names of operators in python and explain them with examples. (CO1, L2)
  7. a) Develop a python program to find whether the number is palindrome or not. (CO2, L3)  
OR  
b) Explain loops in Python with examples. (CO2, L2)
  8. a) Explain different categories of arguments used in functions in python. (CO3, L3)  
OR  
b) Develop a python program to create a module and import it in another program. (CO3, L2)
  9. a) Develop a python program to create a dictionary and add, modify, delete values in the dictionary and print them. (CO4, L2)  
OR  
b) Define tuple. Explain about tuples with examples. (CO4, L3)
  10. a) Develop a python program to demonstrate exception handling. (CO5, L3)  
OR  
b) Define method overriding. Explain with an example. (CO5, L2)
- @@@

**PYTHON PROGRAMMING LAB**  
Offered to B.C.A. Honours – Minor

<b>Course Code</b>	: <b>23DSMIP121</b>	No. Of Lecture Hours per week	: 2
Year of Introduction	: 2023-24	Total No. Of Lecture Hours	: 30
Year of Offering	: 2023-24	CIA Marks	: 15
Year of Revision	: New Course	SEE Marks	: 35
Percentage of Revision	: 0%	Total Marks	: 50
Course Delivery Method	: Class Room / Blended Mode - Both	Credits	: 1

**Course Outcomes:**

<b>COURSE OUTCOME NO</b>	<b>Upon successful completion of this course, the student will be able to</b>	<b>PROGRAM OUTCOME NO</b>
<b>CO1</b>	Write, Test and Debug Python Programs	<b>PO1</b>
<b>CO2</b>	Implement Conditionals and Loops for Python Programs	<b>PO1,PO2,PO3</b>
<b>CO3</b>	Organize code into modules for better code organization and reusability.	<b>PO2,PO3</b>
<b>CO4</b>	Implement functions and represent Compound data using Lists, Tuples and Dictionaries	<b>PO3,PO4</b>
<b>CO5</b>	Implement OOP concepts and write applications in python.	<b>PO5,PO3</b>

**CO-PO MAPPING MATRIX**

	<b>CO - PO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>
<b>23AIMIP12 1</b>	<b>CO1</b>	H					
	<b>CO2</b>	L	H	M			
	<b>CO3</b>		H	M			
	<b>CO4</b>			L	H		
	<b>CO5</b>			H		L	

**List of Experiments:**

1. Python Program to Find the Square Root
2. Python Program to Swap Two Variables
3. Python Program to Generate a Random Number
4. Python Program to Check if a Number is Odd or Even
5. Python Program to Find the Largest Among Four Numbers
6. Python Program to Check Prime Number
7. Python Program to Check Whether a number is Palindrome or Not
8. Python Program to Display the multiplication Table
9. Python Program to Print the Fibonacci sequence
10. Python Program to Check Armstrong Number
11. Python Program to Find the Sum of Natural Numbers
12. Python Program to Find Factorial of Number Using Recursion
13. Python Program to check given number is prime or not using functions.
14. Python Program to demonstrate usage of keyword, default and variable length arguments.
15. Python Program for lambda functions.
16. Python Program to create module and import it.
17. Python Program to create a list and perform operations on its contents.

18. Python Program to perform operations on tuples.
19. Python Program to create a dictionary and print its content.
20. Python program to perform operations on sets.
21. Python Program for inheritance.
22. Python Program for method overriding.
23. Python Program for exception handling.
24. Python Program to demonstrate exception handling.
25. Python Program to demonstrate user defined exception