

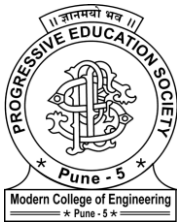
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**Course Outcomes**  
**Academic Year 2017-18**

<b>C&amp; C++ Programming</b>	
<b>C101.1</b>	<b>Explain the fundamentals of C programming and usage of functions.</b>
<b>C101.2</b>	<b>Write programs using basic features of C Language</b>
<b>C101.3</b>	<b>Describe Object Oriented Paradigm, classes, Constructor &amp; destructors using C++</b>
<b>C101.4</b>	<b>Apply basic object oriented concepts to solve various computing problems</b>
<b>C101.5</b>	<b>Implement file operations in C &amp; C++ programming for a given application.</b>

<b>Computer Organization</b>	
<b>C102.1</b>	<b>Describe function &amp; characteristics of computer system &amp; different Logic Gates</b>
<b>C102.2</b>	<b>Explain various functional units of digital computer</b>
<b>C102.3</b>	<b>Explain the organization of CPU</b>
<b>C102.4</b>	<b>Describe different processor architecture</b>
<b>C102.5</b>	<b>Explain basics of Parallel Computer Architecture</b>

<b>Principles of Programming Practices</b>	
<b>C103.1</b>	<b>Define fundamental concept of computer hardware, software and types of computer languages</b>
<b>C103.2</b>	<b>Develop analytical and logical thinking with problem solving capabilities</b>
<b>C103.3</b>	<b>Explain general principles of computer programming such as simple loops , decision structures and functions</b>
<b>C103.4</b>	<b>Design simple and complex algorithms and determine their time complexity</b>
<b>C103.5</b>	<b>Explain the importance of the software development process including specifications, design, implementation, testing and documentation.</b>



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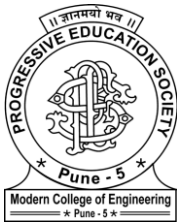
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<b>Discrete Mathematics</b>	
<b>C104.1</b>	<b>Solve mathematical problems by using various mathematical induction approaches.</b>
<b>C104.2</b>	<b>Prove mathematical statements using various methods of proofs.</b>
<b>C104.3</b>	<b>Apply logical reasoning to solve a variety of problems.</b>
<b>C104.4</b>	<b>Describe and implement relations and functions.</b>
<b>C104.5</b>	<b>Use the basic properties of graphs and trees to model simple applications.</b>

<b>Probability and Statistics</b>	
<b>C105.1</b>	<b>Apply statistical concepts to solve basic problems</b>
<b>C105.2</b>	<b>Solve the problems of Discrete Distributions and Continuous Distributions.</b>
<b>C105.3</b>	<b>Explain various Descriptive Statistical concepts</b>
<b>C105.4</b>	<b>Describe Hypothesis and its estimates</b>
<b>C105.5</b>	<b>Analyze Categorical Data using Statistical Quality Control techniques.</b>

<b>Business Communications</b>	
<b>C106.1</b>	<b>Apply knowledge of principles of business communication.</b>
<b>C106.2</b>	<b>Perform self-SWOT analysis.</b>
<b>C106.3</b>	<b>Improve presentation skills</b>
<b>C106.4</b>	<b>Write technical documents and business reports</b>
<b>C106.5</b>	<b>Explain IT ethics &amp; etiquette</b>

<b>C &amp; C++ Laboratory</b>	
<b>C107.1</b>	<b>Implement basic concepts of programming using C Language</b>
<b>C107.2</b>	<b>Implement Modular Programming with Functions using C.</b>
<b>C107.3</b>	<b>Write programs using classes, Constructors &amp; destructors using C++</b>
<b>C107.4</b>	<b>Apply basic Object Oriented Concepts using C++ Language.</b>
<b>C107.5</b>	<b>Implement File handling concepts using C and C++ language</b>



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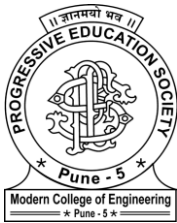
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<b>Open Source tools Laboratory</b>	
C108.1	<b>Install various Operating Systems and implement Linux commands.</b>
C108.2	<b>Design documents using Writer, Impress and Calc.</b>
C108.3	<b>Design a web page using HTML and DHTML.</b>
C108.4	<b>Create blogs and groups for open source tools.</b>

<b>Java programming</b>	
C204.1	<b>Describe Software engineering, Process models and information system.</b>
C204.2	<b>Explain SDLC cycle and Requirement Engineering.</b>
C204.3	<b>Design data flow diagrams, decision tables and ERD.</b>
C204.4	<b>Describe software testing, software security, software maintenance and control and audit of information system</b>
C204.5	<b>Explain software deployment, component based software engineering, distributed software engineering and service oriented architecture.</b>

<b>Data Structures using C</b>	
C202.1	<b>Explain applications of basic data structures Array &amp; Linked List</b>
C202.2	<b>Explain various data structures such as stacks, queues, trees and graphs.</b>
C202.3	<b>Describe different searching and sorting algorithms</b>
C202.4	<b>Explain file handling concepts.</b>

<b>Web Technologies</b>	
C203.1	<b>Explain basic components of Web Technologies.</b>
C203.2	<b>Design static web pages using HTML.</b>
C203.3	<b>Design dynamic and interactive web pages using VBScript and JavaScript.</b>
C203.4	<b>Create XML documents for web development</b>
C203.5	<b>Design dynamic website using PHP.</b>



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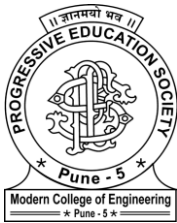
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<b>System Analysis and Design</b>	
C204.1	Describe Software engineering, Process models and information system.
C204.2	Explain SDLC cycle and Requirement Engineering.
C204.3	Design data flow diagrams, decision tables and ERD.
C204.4	Describe software testing, software security, software maintenance and control and audit of information system
C204.5	Explain software deployment, component based software engineering, distributed software engineering and service oriented architecture.

<b>Management Theory and Practices</b>	
C205.1	Describe the Functions and activities of the Management.
C205.2	Explain the Organizational structure.
C205.3	Describe the Leadership, Team Building Models
C205.4	Elaborate the Conflict Management, Total Quality Management and Re-engineering Process
C205.5	Explain Management Information System, Customer Relationship and Supply Chain Management
C205.6	Elaborate Managerial Decision Making Models

<b>Web Programming Laboratory</b>	
C206.1	Design static web pages.
C206.2	Design dynamic and interactive web pages using VBScript and JavaScript
C206.3	Write scripts using XML.
C206.4	Create dynamic websites using PHP.

<b>Java Programming Laboratory</b>	
C207.1	Implement OOPs concepts using Java programming.
C207.2	Implement the concept of multithreading.
C207.3	Design GUI using Java Program.
C207.4	Write Client Side Programs
C207.5	Implement file handling using Java.
C207.6	Create connectivity using JDBC and networking concepts.



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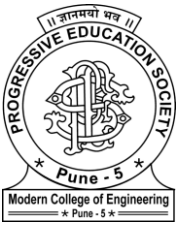
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<b>Data Structures Laboratory</b>	
C208.1	Implement elementary data structures such as Arrays, linked lists using C.
C208.2	Demonstrate practical knowledge on the applications of stacks, queues, trees and graph.
C208.3	Implement different searching and sorting algorithms.
C208.4	Implement file handling with data structure in C Programming.

<b>Advanced Java</b>	
C301.1	Describe the use of various types of JDBC drivers.
C301.2	Develop web application using Servlet & JSP.
C301.3	Implement business logic using EJB.
C301.4	Develop web application with Spring MVC.
C301.5	Perform database operations using HQL

<b>Database Management System</b>	
C302.1	Describe the basic concepts of DBMS.
C302.2	Design E-R model for real world applications.
C302.3	Apply concepts of relational model & relational database design for database applications.
C302.4	Create database applications using nonprocedural & procedural query languages.
C302.5	Explain non-relational databases.

<b>Operating Systems</b>	
C303.1	Describe the basics of System Softwares like Assembler, Compiler, Linker, Loader
C303.2	Evaluate the various CPU scheduling algorithms and deadlock algorithms
C303.3	Illustrate various memory management techniques and page replacement algorithm.
C303.4	Apply disk management and disk scheduling algorithms for better utilization of external memory.



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C303.5	Explain the basic concepts of Linux OS and implement basic Shell commands.
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**Object oriented Analysis and Design**

C304.1	Describe different object oriented software development methodologies.
C304.2	Analyse software requirements using Use cases.
C304.3	Produce initial software Design using class and Object diagrams.
C304.4	Apply concept to produce detailed design using various UML diagrams.

**Operations Research**

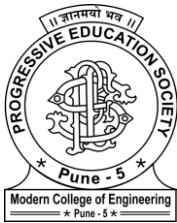
C305.1	Apply various methods of Linear Programming Problem for real world problems.
C305.2	Implement Transportation and Assignment Problems to map real world problems.
C305.3	Analyse Project management Techniques.
C305.4	Apply various Strategies for decision making.
C305.5	Use Simulation and Random numbers techniques for statistical analysis.

**Hbase Laboratory**

C306.1	Design and implement a database schema for a real world application using entity relationship diagram as well as normalization
C306.2	Manipulate data from relational database using SQL Queries.
C306.3	Apply stored procedures and functions to access and manipulate database using PL/SQL
C306.4	Execute queries of non-relational database using Hbase.
C306.5	Explain distributed database system.

**Advanced Java Laboratory**

C307.1	Get acquainted with J2EE environment and JDBC
C307.2	Implement server side application.
C307.3	Design Information management and processing system.



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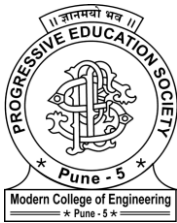
C307.4	Implement Enterprise level application.
C307.5	Build web application using Spring MVC.
C307.6	Apply basic concepts of Hibernate and HQL.

<b>UML-Lab Umbrello</b>	
C308.1	Implement requirement analysis by designing Use Case Diagram using UML tool for real world application.
C308.2	Design static structure of real world application using UML tool.
C308.3	Design dynamic and behavioral structure of real world application using UML tool.

<b>Advanced Web Technology</b>	
C401.1	Describe the concept of .NET Framework
C401.2	Explain the role of C# in .NET Framework.
C401.3	Define the importance of ASP.NET in .NET Framework.
C401.4	Describe Silverlight application.
C401.5	Demonstrate ADO.NET applications.
C401.6	Describe the concept of LINQ.

<b>Banking and Financial Accounting Management</b>	
C402.1	Implement the basic Accounting concepts in the banking and financial applications
C402.2	Apply the basics of cost accounting concepts in real world problem
C402.3	Implement the working capital concepts.
C402.4	Use the concepts of banking domain

<b>Computer Networks and Information Security</b>	
C403.1	Describe various data communication devices and their functions.
C403.2	Explain the roles and services of protocols in networking.



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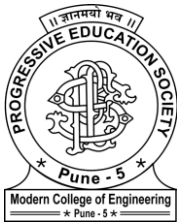
C403.3	Explain security and cryptographic algorithms.
C403.4	Explain Secure binding of public and private values and network infrastructure services.

<b>Elective-I Information System Audit</b>	
C404.1	Describe Information System audit concepts and purpose of controls in information system environment.
C404.2	Evaluate General and Business Process Application and Management Controls of Information System environment
C404.3	Recognize the susceptibility of errors and remedies in processes involving Information Technology
C404.4	Provide assurance regarding IS Audit objectives to IT Enabled services by using ISA guidelines.
C404.5	Use of Information systems audit standards with COBIT framework

<b>Elective-I Cyber Laws</b>	
C405.1	Describe the concept and Social issues of Cyber space.
C405.2	Discuss the different IT-Act.
C405.3	Explain the various cybercrimes.
C405.4	Distinguish the Intellectual Property Protection of Cyberspace
C405.5	Explain the concept of Privacy and data protection.

<b>Advanced Database Management System</b>	
C406.1	Implement query processing techniques and respective algorithms
C406.2	Characterize Centralized databases and Parallel Databases applications
C406.3	Identify Distributed Database Process, Architecture, and Design Principles.
C406.4	Design, Develop and analyze Object Based Database
C406.5	Design and code data transfer scripts using XML languages
C406.6	Analyze and evaluate variety of NoSQL databases





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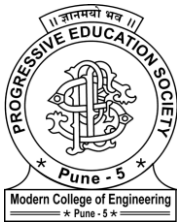
<b>Web Technology Laboratory</b>	
<b>C407.1</b>	<b>Explain .NET Framework.</b>
<b>C407.2</b>	<b>Develop C#.Net Applications.</b>
<b>C407.3</b>	<b>Design Web Applications using ASP.NET</b>
<b>C407.4</b>	<b>Process data in ASP.NET using XML.</b>
<b>C407.5</b>	<b>Describe SilverLite and LINQ.</b>

<b>Advanced DBMS Laboratory</b>	
<b>C408.1</b>	<b>Implement the basic concepts of database using RDBMS &amp; SQL</b>
<b>C408.2</b>	<b>Solve the complex queries of SQL</b>
<b>C408.3</b>	<b>Explain the setup of distributed Database environment.</b>
<b>C408.4</b>	<b>Implement object oriented queries using SQL</b>
<b>C408.5</b>	<b>Design the database using XML and solve XML queries</b>

<b>Network and Security Laboratory</b>	
<b>C409.1</b>	<b>Implement different networking commands using CISCO packet writers.</b>
<b>C409.2</b>	<b>Describe campus LAN Design and testing of LAN using ping command.</b>
<b>C409.3</b>	<b>Implement Echo server using C/C++/Java programming language.</b>
<b>C409.4</b>	<b>Configure Web Server and Client.</b>
<b>C409.5</b>	<b>Implement Symmetric and Asymmetric key cryptographic algorithm using C Programming.</b>

<b>Recent Technologies in IT</b>	
<b>C501.1</b>	<b>Describe LAMP Technology.</b>
<b>C501.2</b>	<b>Illustrate various CRUD Operations.</b>
<b>C501.3</b>	<b>Implement concept of OOP using PHP.</b>
<b>C501.4</b>	<b>Apply file handling concepts using PHP.</b>
<b>C501.5</b>	<b>Develop session Management and cookies using PHP.</b>

<b>Software Testing and Quality Assurance</b>	
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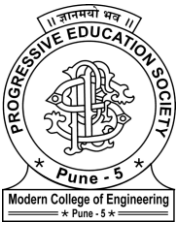
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C502.1	Describe software quality, Quality control, quality assurance and process improvement.
C502.2	Design Test Plan, manual Test Cases for software projects.
C502.3	Apply software testing Methodologies like White Box and Black Box.
C502.4	Explain various software testing types.
C502.5	Describe Defect management for software system.
C502.6	Explain software testing automation.

<b>Software Engineering</b>	
C503.1	Describe various software development and process models.
C503.2	Explain the Preliminary Planning of an IT Project.
C503.3	Explain software Project Management.
C503.4	Explain the dependability properties and security specification in software development.
C503.5	Explain different software architectures and product matrices used for software development.

<b>Data warehousing, Data mining And Business Intelligence</b>	
C504.1	Perform operations on Data Warehouse using OLAP tool.
C504.2	Describe process of data mining and different statistical techniques to know the data.
C504.3	Solve real data mining problems by using the right tools to find interesting patterns.
C504.4	Describe a Business Intelligence Fundamentals, Architecture.
C504.5	Identify the different Business intelligence reporting tools.

<b>Elective-II Animation and Gaming</b>	
C505.1	Explain concept of graphics and its algorithms.
C505.2	Describe the basics of types, techniques and principles required to develop animation application.



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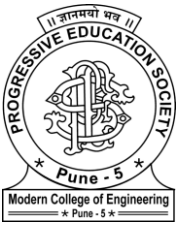
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C505.3	Describe basic concepts and development platform of Gaming applications
C505.4	Explain structure of game and core architecture using state controls in Java.

<b>Elective-II Mobile Computing</b>	
C506.1	Describe the concept and technique of Wireless telephony.
C506.2	Explain the concept of wireless networking.
C506.3	Describe data management issue of mobile wireless network.
C506.4	Design and create mobile application.
C506.1	Describe the concept and technique of Wireless telephony.

<b>Recent Technologies in IT Laboratory</b>	
C507.1	Install and configure LAMP server.
C507.2	Implement CRUD Operations using MySQL, HTML.
C507.3	Develop an application using session management.
C507.4	Implement PHP Program using File handling.
C507.5	Create a program using Google API.

<b>Software Testing and Quality Assurance Laboratory</b>	
C508.1	Design Test Plan, manual Test Cases for given real world applications.
C508.2	Design White Box and Black Box testing test cases for real world applications
C508.3	Prepare Defect Repository for real world applications
C508.4	Use Open Source testing tools such as selenium IDE for GUI testing.



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<b>Mini Project</b>	
<b>C509.1</b>	<b>Develop team building skills.</b>
<b>C509.2</b>	<b>Apply software development life cycle to real life projects</b>
<b>C509.3</b>	<b>Apply technologies learnt during program to real life projects.</b>

<b>Major Project</b>	
<b>C601.1</b>	<b>Analyze real life projects.</b>
<b>C601.2</b>	<b>Provide solutions to real life projects.</b>
<b>C601.3</b>	<b>Develop team building skill and communicate effectively with stakeholders of project</b>

<b>Seminar on domain of Major Project</b>	
<b>C602.1</b>	<b>Review the literature.</b>
<b>C602.2</b>	<b>Improve the presentation and communication skill.</b>
<b>C602.3</b>	<b>Enhance domain knowledge.</b>
<b>C602.4</b>	<b>Improve Technical writing skills.</b>

