

**Sant Gadge Baba Amravati University, Amravati**

**Part B**

**Syllabus Prescribed for the Year 2023-24**

**UG Programme: B.Sc.-Part II [Computer Science/Computer Application (Voc/ Non-Voc)/IT]**

**Semester III**

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Periods)
<b>2CS1</b>	<b>Networking and Web Technology</b>	<b>72</b>

**COs: On completion of course, the students will be able to**

1. Understand Internet and Networking
2. Understand the fundamentals of data communication, networking, internet and their importance.
3. Understand different networking topologies
4. Describe the seven layer OSI model with data transmission media
5. Understanding Switching and Multiplexing techniques

Unit	Content
Unit I	<p><b>Introduction to Networking:</b> Introduction, Need of computer communication network, Communication protocol, Types of network.</p> <p><b>Topology:</b> Ring, Bus, Star &amp; Mesh. LAN, MAN, WAN and Internet. Connection v/s Connectionless protocol. <span style="float: right;"><b>(12 periods)</b></span></p>
Unit II	<p><b>OSI Reference Model:</b> Introduction, OSI Model, Functions of seven layers of OSI.</p> <p><b>Data Transmission Media:</b> Guided Media and Wireless media.</p> <p><b>Switching:</b> Circuit, Message, Packet.</p> <p><b>Multiplexing:</b> Frequency Division, Time Division. <span style="float: right;"><b>(12 periods)</b></span></p>
Unit III	<p><b>Internet:</b> History, Applications of Internet, Types of Internet Connection: wired and wireless. Internet Protocols: TCP/IP, FTP, HTTP, URL, e-mail address, WWW, Web browsers, Search Engines. <span style="float: right;"><b>(12 periods)</b></span></p>
Unit IV	<p><b>HTML :</b>History of Markup Languages, Introduction to HTML, Structure of HTML Document, Tags: &lt;HTML&gt;, &lt;HEAD&gt;, &lt;TITLE&gt;, &lt;BODY&gt;, Heading tags, &lt;P&gt;, &lt;BR&gt;, &lt;HR&gt;, &lt;B&gt;, &lt;I&gt;, &lt;U&gt;, &lt;EM&gt;, &lt;PRE&gt;, &lt;BIG&gt;, &lt;SMALL&gt;, &lt;STRONG&gt;, &lt;STRIKE&gt;, &lt;SUB&gt;, &lt;SUP&gt;, &lt;A&gt;, &lt;LINK&gt;, &lt;IMG&gt;, &lt;MARQUEE&gt;, &lt;BLOCKQUOTE&gt;, Table tags and its attributes, List tags and its Attributes, &lt;FONT&gt; tags. <span style="float: right;"><b>(12 periods)</b></span></p>
Unit V	<p><b>XML:</b> Features of XML, Simple XML document, Elements, Attributes, <b>Components of XML document:</b> document prolog and document instance.</p> <p><b>DTD(Document Type Definition):</b> Introduction, Need of DTD, declaring elements, element content model, declaring attributes, attribute types, Internal and External DTD. <span style="float: right;"><b>(10 periods)</b></span></p>
Unit VI	<p><b>Style Sheet :</b> Introduction, Advantages and applications of style sheet,</p> <p><b>CSS:</b> Introduction, syntax of CSS with example, Type of style sheet (Embedded, External, Inline and Class), Units, Classes and Id attributes,</p> <p><b>Properties:</b> Text, Font, Color, Background, Border, Height, Margin, width. CSS with HTML and XML. <span style="float: right;"><b>(10 periods)</b></span></p>
<b>*SEM: III</b>	
<b>**Activities</b>	<ol style="list-style-type: none"> <li>1. Assignment</li> <li>2. Group discussion</li> <li>3. Study tour/ Industrial visit <b>(4 periods)</b></li> </ol>

**Course Material/Learning Resources**

**Text books:**

1. Computer Networks (Fourth Edition) - Andrew S. Tanenbaum (PHI)
2. Mastering XML: Ann Navaro, Chuck White, Linda Burman, BPB Publication.
3. HTML Complete :BPB Publication

**Reference Books:**

1. Business Data Communication & Networking (fifth edition) - Fitzerland & Dennis.
2. Data and Computer Communication – William Stallings (Pearson)

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3. Data Communication and Networking – Behrouz A. Forouzan (McGraw Hill)
4. Computer Network & Internet - Douglas E. Comer (Pearson)
5. The Complete reference-Web Design, Second Edition By Thomas A. Powell, TMH.
6. Inside XML : BPB Publication.

Weblink to Equivalent MOOC on SWAYAM if relevant:

Weblink to Equivalent Virtual Lab if relevant:

Any pertinent media (recorded lectures, YouTube, etc.) if relevant:

**IMPORTANT NOTES:**

Note: Please use Times New Roman 10 point font

**(After filling the Table, *select the Table—Table Properties- Borders and Shading—None, so that all Border Lines will get vanished*)**

**\*SEM needs to be designed only for Courses in all UG Programmes**

**\*\*Activities/Assignments/tasks/projects (individual/group)**

**Some Tips to extract and mine skill components from the Course (for ready reference)**

What do you expect Students to LEARN or EXPERIENCE in the SEM/SEC?

Identify Employability Skills for SEM/SEC		
Interpersonal Skills	<input type="checkbox"/> Information Use	<input type="checkbox"/> Technology Use
Personal Qualities	<input type="checkbox"/> Communication Skills	<input type="checkbox"/> Applied Academic Skills
Resource Management	<input type="checkbox"/> Systems Thinking	<input type="checkbox"/> Critical Thinking Skills

**Employability Skills Categories**

Effective Relationships	Interpersonal Skills Personal Qualities
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Workplace Skills	Resource Management Information Use Communication Skills Systems Thinking Technology Use
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Applied Knowledge	Applied Academic Skills Critical Thinking Skills
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**UG Programme: B.Sc-Part-II [Computer Science/Computer Application (Voc/ Non-Voc)/IT]**  
**Semester-IV**

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Periods)
<b>2CS2</b>	<b>RDBMS and Core Java</b>	<b>72</b>

- Course Outcomes:**
1. Understanding basics concepts of DBMS
  2. Demonstrating SQL commands
  3. Demonstrating PL/SQL concepts
  4. Writing basic java programs using basics features of Java programming language/
  5. Demonstrating concepts of OOP's using classes, Inheritance, Interfaces etc.

Unit	Content	No of Periods
Unit I	<b>Fundamentals of DBMS:</b> Traditional Vs DBMS File approach, DBMS Architecture, Data Models, Relational Model, Relations, Domain and Attributes, Keys, E-R diagram, reducing ER diagram to table, Functional Dependency, Normalization: 1NF, 2NF, 3NF, 4NF, BCNF	<b>10</b>
Unit II	<b>Introduction to SQL:</b> Components of SQL, data types, operators <b>DDL Commands:</b> CREATE, ALTER, DROP, RENAME, <b>DML Commands:</b> SELECT, INSERT, DELETE & UPDATE; <b>Clauses:</b> ORDER BY, GROUP BY and HAVING; <b>Joins and Unions:</b> Self, Equi and Outer Join, Unions and Intersection. <b>Functions:</b> aggregate functions, string functions.	<b>12</b>
Unit III	<b>PL/SQL:</b> Features and block structure, variables and constant, data types, Identifiers, Operators and expression, Conditional statement, iterative statement. <b>Cursor :</b> Concepts of cursor, types of cursor, declaring, opening, using cursors, fetching data, closing a cursor, cursor attributes, Handling Exceptions, Creating Procedures, Creating Function, <b>Triggers:</b> Create Triggers, Types of Triggers, Creating BEFORE and AFTER Triggers, INSTEAD-OF triggers, Inserting, Updating and Deleting Triggers.	<b>12</b>
Unit IV	<b>Introduction to JAVA:</b> History and evolution, Feature, JRE, JDK, JVM, Tokens of Java, Data types and Literals, Operators, Structure of Java Program, Access controls, modifiers, type conversion and casting, <b>Control of Flow:</b> Selection Statements, Iteration Statements. Command Line Argument, Arrays.	<b>12</b>
Unit V	<b>Classes &amp; OOPs:</b> Class, Object, Method, <b>Constructor:</b> types, this Keyword, <b>Polymorphism:</b> Overloading & Overriding, <b>Inheritance:</b> types of inheritance, Super, <b>Abstract class, Interfaces:</b> Interface concept, Defining, and Implementing of Interface., Using Final (variables , methods and classes). Garbage Collection.	<b>12</b>
Unit VI	<b>String &amp; Packages:</b> <b>String:</b> String operation, String comparison, Searching and modifying string, StringBuffer. Wrapper classes, <b>Packages:</b> Package concept, Defining Package, organizing classes and interfaces in packages, making jar files for library packages, Java In-built Package.	<b>10</b>
<b>*SEM</b>		

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**Activities	1. Assignments 2. Quizzes 3.Seminars 4. Internal Assessments	4

**Course Material/Learning Resources**

**Text books:**

1. Introduction to Database Management Systems by Muzumdar TMH
2. Database System Using Oracle: A simplified Guide to SQL & PL/SQL : Nilesh Shah, PHI Publication
3. Herbert Schiedt “Java the Complete Reference”, TMH
4. Teach Yourself 'Java' in 2 Hrs : By Sams.
5. Java for You : By P. Koparkar

**Reference Books:**

1. Fundamentals of Database Systems (4th Ed) By: Elmasri and Navathe
2. Database System Concepts (4th Ed) By: Korth, Sudarshan, Silberschatz
3. Patricks Naughton, “Java Handbook”,Osborne McGraw Hill
4. Programming with JAVA - A Primer : By E.Balguruswamy (Tata McGraw)

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Applied Knowledge	Applied Academic Skills Critical Thinking Skills