DEPARTMENT OF COMPUTER SCIENCE

COURSE CURRICULUM & MARKING SCHEME

B.Sc. III, IV, V, VI Semester

COMPUTER SCIENCE

(Based on Choice Based Credit System)

SESSION : 2024-25

ESTD : 1958

GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG, 491001 (C.G.)

(Former Name – Govt. Arts & Science College, Durg)

NAAC Accredited Grade A+, College with CPE - Phase III (UGC), STAR COLLEGE (DBT)

Phone : 0788-2212030

Website - www.govtsciencecollegedurg.ac.in, Email – autonomousdurg2013@gmail.com

Course Structure for CBCS
B.Sc. (CS)- III Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BCS 301(L)	DSC	Programming in Java	80	32	20	8			100	40	3	1		3
BCS 302(P)		Programming in Java Lab					50	20	50	20			1x2	1
BCS 303 (L)	DSE	Data Communication and Networking	80	32	20	8			100	40	3	1		4
		TOTAL							250	100				8

Course Structure for CBCS
B.Sc. (CS)- IV Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BCS 401(L)	DSC	Database Management System	80	32	20	8			100	40	3	1		3
BCS 402(P)		DBMS Lab					50	20	50	20			1x2	1
BCS 403 (L)	DSE	Digital electronics and microprocessor	80	32	20	8			100	40	3	1		4
		TOTAL							250	100				8

Course Structure for CBCS
B.Sc. (CS)- III Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BCS 301(L)	DSC	Programming in Java	80	32	20	8			100	40	3	1		3
BCS 302(P)		Programming in Java Lab					50	20	50	20			1x2	1
BCS 303 (L)	DSE	Data Communication and Networking	80	32	20	8			100	40	3	1		4
		TOTAL							250	100				8

GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25

Part A: Programming in Java			
Program: **B. Sc. (CS)**	Class: **B. Sc. (CS) –III Semester**	Year: **2024**	Session:**2024-2025**
Course Code	**BCS-301 (L)**		
Course Title	**Programming in Java**		
Course Type	**Core Course**		
Pre-requisite (if any)	None		
Course Objectives	This course intends to provide in-depth knowledge of Object oriented programming using Java and to solve real-life problems through software development using Java.		
Course Outcome	**On successful completion of the course, thestudent will be able to:** **1:** Understand the concepts of basics of Java programming Language and get hands on with selection and iterative building blocks for coding. **2:** Understand and implement the concept of Inheritance, Interface and packages in java. **3:** Understand and implement the exception handling and multithreading mechanism using java. **4:** Describe basics of input-output streams and JDBC programming in java **5:** Describe fundamental of software development using the concept of Applet and AWT in java		
Credit Value	**3 Credits**	**1 credit =15 Hours – Learning and Observation**	
Total Marks	**Maximum Marks :100**	**Minimum Passing Marks:40**	

B. Sc. (CS) – III Semester
Programming in Java
Course Code– BCS-301 (L)

Max Mark: 60 **Min Marks: 24**

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

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Unit	Part B – Topics	No. of Lecture
1.	**UNIT – I : Introduction** History of java, C++ verses Java, features of java, data types, control structures: if else, switch case, looping statement: while, do while, for loop, new version of for loop, break, continue statement, arrays and its types , , string and String Buffer class, Wrapper Classes, vectors.	9
2	**UNIT – II:** Basics of class and object, constructor and its types, methods and its types, method overloading, this keyword. **Inheritance:** Basics types, method Overriding, using abstract classes, uses of final keyword final classes, using super. **Packages and Interfaces:** Defined CLASSPATH, importing packages, implementing interface.	9
3	**UNIT – III :** **Exception Handling: Basics of** Exception handling, types of exception, using try and catch, throwing exceptions, user defined exceptions, finally, throw verses throws. **Multithreaded Programming:** Java thread model, thread life cycle. Various functions of Thread class and Runnable interface, creating threads, and thread priorities, synchronization. Inter thread communication.	9
4	**UNIT – IV:** **Input/Output:** Basic of Streams, Byte and Character Stream, IO stream package, predefined streams, reading and writing from console and reading and writing from files. **Networking:** Networking Basics. TCP/IP client & server sockets, URL connection.	9
5	**UNIT – V: Shell Programming** **Applets:** Fundamentals, life cycle, overriding update, HTML APPLET tag, passing parameters. Developing single applets. **Introduction to AWT:** Window fundamentals, creating windowed, programs working with graphics, using AWT controls, menus. Delegation event model: handling mouse and keyboard events.	9

Part C -Learning Resources
Text Books, Reference Books, Other Resources
BOOKS RECOMMENDED: **BOOKS RECOMMENDED:** 1. JAVA COMPLETE REFERENCE - BY HERBERT SCHILDT 2. PROGRAMMING WITH JAVA - BY E. BALAGURUSAMY 3. JAVA PROGRAMMING - KHALID MUGHAL

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods:		
Maximum Marks:	**100 Marks**	
Continuous Comprehensive Evaluation (CCE):	**20 Marks**	
Semester End Exam (SEE):	**80 Marks**	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks	
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (02 each)	04 x 5 = 20 Marks
	Question - C: Short answer type question	05 x 5 = 25 Marks
	Question -D: Long answer type question	07 x 5 = 35 Marks
	Total	**= 80 Marks**

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GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25
B.Sc. (CS)– III Semester
Programming in Java Lab
Course Code– BCS-302 (P)
Lab Course

PART A: INTRODUCTION				
Program:		Class: B.Sc. (CS) Semester -III Semester		Session:2024-2025
1	Course Code	BCS-302 (P)		
2	Course Title	Programming in Java Lab		
3	Course Type	Lab Course		
4	Course Learning Outcome (CLO)	This Course will enable the students to: • provide a foundational understanding of Java programming. • preparing students for more advanced topics and real-world application development.		
5	Credit Value	1 Credit	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks: 50		Minimum Passing Marks: 20

PART B: CONTENT OF THE COURSE	
S. No.	**List of Experiments**
	1. WAP that implements the Concept of Encapsulation. 2. WAP to demonstrate concept of Polymorphism (Overloading and Overridding) 3. WAP the use Boolean data type and print the Prime number Series up to 50. 4. WAP for matrix multiplication using input/output Stream. 5. WAP to add the elements of Vector as arguments of main method (Run time) and rearrange them, and copy it into an Array. 6. WAP to check that the given String is palindrome or not. 7. WAP to arrange the String in alphabetical order. 8. WAP for String Buffer class which perform the all methods of that class. 9. WAP to calculate Simple Interest using the Wrapper Class. 10. WAP to calculate Area of various geometrical figures using the abstract class. 11. WAP where Single class implements more than one interfaces and with help of interface reference variable user call the methods. 12. WAP that use the multiple catch statements within the try-catch mechanism. 13. WAP where user will create a self-Exception using the "throw" keyword. 14. WAP for multithread using the isAlive(), join() and synchronized() methods of Thread class. 15. WAP to create a package using command and one package will import the another package. 16. WAP for AWT to create Menu and Popup Menu for Frame. 17. WAP for Applet that handle the KeyBoard Events. 18. WAP, which support the TCP/IP protocol, where client gives the message and server will be, receive the message. 19. WAP to illustrate the use of all methods of URL class. 20. WAP for JDBC to insert the values into the existing table by using prepared Statement. 21. WAP for JDBC to display the records from the existing table. 22. WAP to demonstrate the Border Layout using applet. 23. WAP for Applet who generate the MouseMotionListener Event. 24. WAP for display the checkboxes, Labels and TextFields on an AWT. 25. WAP to calculate the Area of various geometrical figures using the abstract class. 26. WAP for creating a file and to store data into that file.(Using the FileWriterIOStream) 27. WAP to display your file in DOS console use the Input/Output Stream. 28. WAP to create an Applet using the HTML file, where Parameter Pass for font Size and Font type and Applet message will change to corresponding parameters.

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PART C - LEARNING RESOURCES	
Text Books, Reference Books, Other Resources	
TEXT BOOKS Recommended: 1. JAVA COMPLETE REFERENCE - BY HERBERT SCHILDT 2. PROGRAMMING WITH JAVA - BY E. BALAGURUSAMY 3. JAVA PROGRAMMING - KHALID MUGHAL Online Resources: (e- Resources/ e- Books/ e- Learning Portals)	
PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks: 50 Marks** **(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)**	
Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25
B. Sc. (CS) – III Semester
Data Communication and Networking
Course Code– BCS-303 (L)

Max Mark: 10(80+20) **Min Marks: 40**

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

Part A: Data Communication and Networking			
Program: **B. Sc. (CS)**	Class: **B. Sc. (CS) –III Semester**	Year: **2024**	Session:**2024-2025**
Course Code	**BCS-303 (L)**		
Course Title	**Data Communication and Networking**		
Course Type	**DSE**		
Pre-requisite (if any)	None		
Course Objectives	To understand network architecture, protocols, and security, enabling efficient design, implementation, and management of robust computer networks.		
Course Outcome	**On successful completion of the course, the student will be able to:** ➢ Understand the fundamentals and functionalities of computer network, Data Communications System and its components. ➢ Analyze the different types of network topologies and protocols. ➢ Analyze various layers of OSI and TCP/IP models. ➢ Explore wireless and wired LANs		
Credit Value	**4 Credits**	**1 credit =15 Hours – Learning and Observation**	
Total Marks	**Max. Marks: 100**	**Min Passing Marks: 40**	

Unit	Part B – Topics	No. of Lecture
1.	**UNIT – I : Introduction** Introduction to Computer Network and Physical Layer: Fundamentals of Computer network, types of computer networks: LAN, MAN, WAN, Network topologies, Transmission modes, ISO-OSI reference model, TCP/IP model, Comparison of OSI and TCP/IP models	12
2	**UNIT – II:** Concept of Analog and Digital Signals, Bandwidth, Multiplexing: TDM, FDM, WDM, CDMA, Transmission Media -Guided, Unguided, switching techniques: Circuit Switching, Message Switching, Packet Switching.	12

3	**UNIT – III:** Data Link Layer: Functions of Data Link Layer, Framing, Error detection and correction codes: checksum, CRC, hamming code, Flow Control: Stop & Wait and Sliding Window Protocols, Error Control: Stop & wait ARQ, Go-back-n, Selective Repeat ARQ, Data link protocols: HDLC and PPP, Medium Access Sublayer: LLC Protocol, IEEE Project 802 series of network standard and CSMA/CD.	**12**
4	**UNIT – IV:** Network Layer and Transport Layer: Functions of Network Layer, Routing Protocols & Algorithms, IPv4, IPv6, X.25, Networking & Internetworking devices, Functions of Transport Layer, Flow Control & Buffering, Transport Layer Protocols: TCP, UDP & SCTP, Network, Principles of Congestion Control.	**12**
5	**UNIT – V:** Common Network Architecture: Wireless LANs 802.11 standards, Overview of VSAT and VPN. Session Layer: Overview, functioning and protocol. Application Layer: BOOTP, DHCP, DNS, TELNET, World Wide Web (WWW), File Transfer Protocol (FTP), Hypertext Transfer Protocol (HTTP), Email Protocols: MIME & SMTP, POP, IMAP, Proxy Server.	**12**
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Part C -Learning Resources
Text Books, Reference Books, Other Resources
BOOKS RECOMMENDED: **BOOKS RECOMMENDED:** 1. Andrew S. Tanenbaum, Computer Networks, PHI / Pearson Education Inc. 2. Behrouz A. Forouzan, Data Communication and Networking, Tata McGraw-Hill. 3. William Stallings, Data and Computer Communication, Pearson Education. 4. Nader F. Mir, Computer and Communication Networks, Pearson Education, 2007. Black, Data & Computer Communication, PHI

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **20 Marks** **Semester End Exam (SEE):** **80 Marks**		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks	
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04 x 5 = 20 Marks Question - C: Short answer type question 05 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total** **= 80 Marks**	

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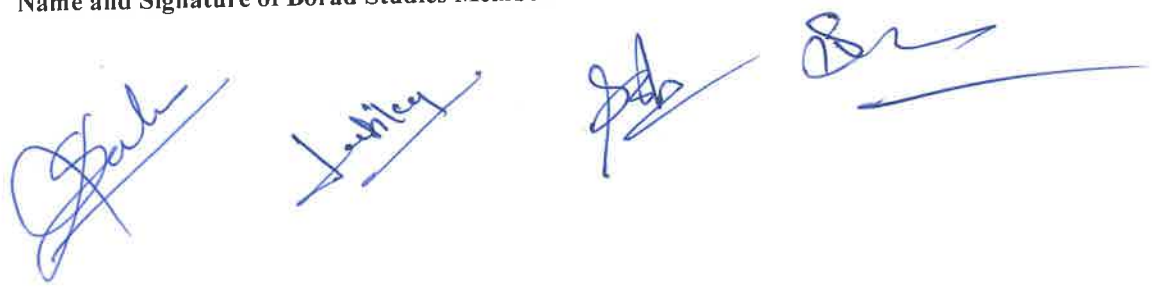

Course Structure for CBCS
B.Sc. (CS)- IV Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BCS 401(L)	DSC	Database Management System	80	32	20	8			100	40	3	1		3
BCS 402(P)		DBMS Lab					50	20	50	20			1x2	1
BCS 403 (L)	DSE	Digital electronics and microprocessor	80	32	20	8			100	40	3	1		4
		TOTAL							250	100				8

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25
B.Sc. (CS)– IV Semester

Database Management System

Course Code– BCS-401 (L)

Max Mark: 60 **Min Marks: 24**

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

Part A: Database Management System			
Program: **B.Sc. (CS)**	Class: **BCS –IV Semester**	Year: **2024**	Session:**2024-25**
Course Code	**BCS-401(L)**		
Course Title	**Database Management System**		
Course Type	**Core Course**		
Pre-requisite (if any)	None		
Course Objectives	The objective of the course is to present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.		
Course Outcome	At the end of this course, the students will be able to: 1. Understand the Databases and their design & development 2. Intellectual Cognitive/ analytical skills: Normalization of Databases. 3. Practical Skills: Using SQL and PL/SQL. 4. Transferable skills: Usage of DBMS design and administration. 5. Gather data to analyze and specify the requirements of a system. 6. Design system components and environments. 7. Build general and detailed models that assist programmers in implementing a system.		
Credit Value	**3 Credit**	**1 credit =15 Hours – Learning and Observation**	
Total Marks	**Max. Marks: 100**	**Min Passing Marks: 40**	

Unit	Part B – Topics	No. of Lecture
1.	**UNIT-I: Overview of Database Management** Data. Information and knowledge, increasing use of data as a corporate resource, data processing verses data management, file-oriented approach verses database oriented approach to data management, data independence, database administration roles, DBMS architecture, different kinds of DBMS users, importance of data dictionary, contents of data dictionary, types of database languages. Data models: network, hierarchical, relational.	9

2	**UNIT-II: Relational Model & Relational Algebra** Entry-Relational model as a tool for conceptual design-entities, attributes and relationships. ER diagrams; Concept of keys, Case studies of ER modelling Generalization; specialization and aggregation converting an ER model into relational schema. Extended ER features. Introduction to UML, Representation in UML, diagram (Class Diagram etc.)	**9**
3	**UNIT-III: Relational Model & Relational Design** **Relational Algebra:** select, project, cross product different types of joins (inner join, outer joins, self-join); set operations, Tuple relational calculus, Domain relational calculus, Simple and complex queries using relational algebra, stand alone and embedded query languages.	**9**
4	**UNIT-IV: Structured Query Language (SQL)** Normalization concept in logical model; Pitfalls in database design, update anomalies: Functional dependencies, Join dependencies, Normal forms(1NF,2NF,3NF), Boyce Codd Normal form, Decomposition, Multi-Valued Dependencies, 4NF, 5NF, De-normalization.	**9**
5	**UNIT-V: Query Processing and Security** Introduction to SQL, constructs (SELECT-----FROM, WHERE----GROUP BY---HAVING------ORDERBY------) INSERT, DELETE, UPDATE, DROP, VIEW definition and use, Temporary tables, Nested queries and correlated nested queries, Integrity constraints; Not Null unique, check, primary, key, foreign key, references, Inner and Outer joins. **Query processing:** parsing, translation, optimization, evaluation and overview of Query processing **protecting the Data Base:** Integrity, Security and Recovery. Domain Constraints, Referential Integrity, Assertion, Triggers, Security & Authorization in SQL.	**9**

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PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOKS Recommended :

1. **Database System Concept:** *A. Silberschatz, H. F. Korth and S. Sudarshan, TMH*
2. **Fundamentals of database Systems:** *Elmasri & Nawathe, pearson Education*
3. **An Introduction to Database Systems:** *C.J. Date, AWL publishing Company*
4. **SQL, PL/SQL:** *Ivan Bayross, BPB Publication*
5. **An Introduction to Database Systems:** *Bipin Desai, Galgotia publication.*
6. **Datebase Management System:** *A. K. Majumdar & P. Bhattacharya, TMH.*

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks

Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (02 each)	04 x 5 = 20 Marks
	Question - C: Short answer type question	05 x 5 = 25 Marks
	Question -D: Long answer type question	07 x 5 = 35 Marks
	Total	**= 80 Marks**

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GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE

PART A: INTRODUCTION

	Program:	**Class: B.Sc. (CS)** **Semester -IV SEM**	**Session:2024-2025**
1	**Course Code**	**BCS-402 (P)**	
2	**Course Title**	DBMS LAB	
3	**Course Type**	Lab Course	
4	**Course Learning Outcome (CLO)**	**This Course will enable the students to:** 1. Demonstrate an understanding of the relational data model. 2. Transform an information model into a relational database schema and to use a DDL,DCL and DML, and/or utilities to implement the schema using a DBMS. 3. Formulate, using relational algebra, solutions to a broad range of query problems. 4. Formulate, using SQL, solutions to a broad range of query and data update problems.	
5	**Credit Value**	**1 Credit**	**1 credit =15 Hours – Learning and Observation**
6	**Total Marks**	**Maximum Marks: 50**	**Minimum Passing Marks: 20**

PART B: CONTENT OF THE COURSE

S. No.	List of Experiments

1. Using the following database,

Colleges (ename, city, address, phone, afdate)
Staffs (sid, sname, saddres, contacts)
Staffjoines (sid, cname, dept, DOJ, post salary0
Techings (sid, class, paperid, fsession, tsession)
Subject (paperid subject paperno, papername)

Write SQL statements for the following –

a) Create the above tables with the given specifications and constraints.
b) Insert about 10 rows as are appropriate to solve the following queries.
c) List the name of the teachers teaching computer subjects.
d) List the name and cities of all staff working in your college.
e) List the names and cities of all staff working in your college who earn more than 15,000
f) Find the staffs whose names start with 'M' or 'R' and ends with 'A' and /or 7 characters long
g) Find the staffs whose date of joining is 2005.
h) Modify the database so that staff N1 now works in C2 College
i) List the names of subjects, which T1 teaches in this session or all sessions.
j) Find the classes that T1 do not teach at present session.
   a. Find the colleges who have most number of staffs.
   b. Find the staffs that earn a higher salary who earn greater than average salary of their college.
   c. Find the colleges whose average salary is more than average salary of C2
   d. Find the college that has the smallest payroll.
   e. Find the colleges where the total salary is greater than the average salary of all colleges
   f. List maximum average, minimum salary of each college.
      a. List the names of the teachers, departments teaching in more than one department
      b. Acquire details of staffs by name in a college of each college.
      c. Find the names of staff that earn more than each staff of C2 College.
      d. Give all principals a 10% rise in salary unless their salary become greater than 20,000 in such case give 5% rise.
      e. Find all staff that do not work in same cities as the colleges they work.
      f. List names of employees in ascending order according to salary who are working in your college or all colleges.
      a. Create a view having fields sname, cname, dept, DOJ, and post
      b. Create a view consisting of cname, average salary and total salary of all staff in that college.
      c. Select the colleges having highest and lowest average salary using above views.

2. Create the following database,

Enrollment (enrollno, name, gender, DOB, address, phone)
Admission (admno, enrollno, course, yearsem, date, cname)
Colleges (cname, city, address, phone, afdate)

Fee Structure (course, yearsem, fee)
Payment (billno, admno, amount, pdate, purpose)

a) Create the above tables with the given specifications and constraints.
b) Insert about 10 rows as are appropriate to solve the following queries.
c) Get full detail of all students who took admission this year class wise
d) Get detail of students who took admission in Bhilai colleges.
e) Calculate the total amount of fees collected in this session
   i) By your college ii) by each college iii) by all colleges
   a) List the students who have not payed full fee
      i) in your college ii) in all colleges
   b) List the number of admissions in your class in every year.
   c) List the students in the session who are not in the colleges in the same city as they live in.
   d) List the students in colleges in your city and also live in your city.

3. Create the following database,

   Subjects (paperid, subject, paper, papername)
   Test (paperid, date, time, max, min)
   Score (rollno, paperid, marks, attendence)
   Students (admno, rollno, class, yearsem)

   a. Create the above tables with the given specifications and constraints.
   b. Insert about 10 rows as are appropriate to solve the following queries.
   c. List the students who were present in a paper of a subject.
   d. List all roll numbers who have passed in fi9rst division
   e. List all student in BSC-II who have scored higher than average
      i) in your college ii) in every college
   f. List the highest score, average and minimum score in BSC-II
      i) In your college ii) in every college

4. Using the following database

   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   Staff Joins (sid, cname, dept, DOJ, post salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

   Write SQL statements for the following –

   a. Create the above tables with the given specifications and constraints.
   b. Insert about 10 rows as are appropriate to solve the following queries.
   c. List the name of the teachers teaching computer subjects.
   d. List the names and cities of all staff working in your college.
   e. List the names and cities of all staff working in your college who earn more than 15,000
   f. Using the following database
      Colleges (cname, city, address, phone, afdate)

5. Using the following database

   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)

Staff Joins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)

a. Find the staffs whose names start with 'M' or 'R' and ends with 'A' and/or 7 characters long.
b. Find the staffs whose date of joining is 2005.
c. Modify the database so that staff N1 now works in C2 college
d. List the names of subjects which T1 teaches in this session or all sessions.

6. Using the following database

Colleges (cname, city, address, phone, afdate)
Staff (sid, sname, saddress, contacts)
Staff Joins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)

a. Find the classess that T1 do not teach at present session.
b. Find the college who have most number of staffs.
c. Find the staffs who earn a higher salary who earn greater than everage salary of their college.
d. Find the colleges whose average salary is more than average salary of C2
e. Find the college that has the smallest payroll.
f. Find the colleges where the total salary is greater than the average salary of all colleges.
g. List maximum, average, minimum salary of each college

7. Using the following database

Colleges (cname, city, address, phone, afdate)
Staffs (sid, sname, saddress, contacts)
Staff Joins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)

a. Find the classes that T1 do not teach at present session.
b. List the names of the teachers, departments teaching in more than one departments.
c. Acquire details of staffs by name in a college or each college.
d. Find the names of staff who earn more than each staff of C2 college.
e. Give all principals a 10% rise in salary unless their salary becomes greater than 20,000 in such case give 5% rise.
f. Find all staff who do not work in same cities as the colleges they work.
g. List names of employees in ascending order according to salary who are working in your college or all colleges.

8. Using the following database

Colleges (cname, city, address, phone, afdate)
Staffs (sid, sname, saddress, contacts)
Staff Joins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)

a. Find the classes that T1 do not teach at present session.

b. Create a view having fields sname, cname, dept, DOJ, and post

c. Create a view consisting of cname, average salary and total salary of all staff in that college.

d. Select the colleges having highest and lowest average salary using above views.

e. List the staff names of a department using above views.

9. Enrollment (enrollno, name, gender, DOB, address, phone)
Admission (admno, enrollno, course, yearsem, yearsem, data, cname)

a. Create the above tabls with the given specifications and constraints.

b. Insert about 10 rows as are appropriate to solve the following queries.

c. Get fullo detail of all students who took admission this year Classwise

d. Get detail of students who took admision in Bhilai colleges.

e. Calculate the total amount of fees collected in this session
i) by your college ii)bye each college iii)by all colleges

10. Enrollment (enrollno. Name, gender, DOB, address, phone)
Admission (admno, enrollno, course, yearsem, date, cname)
Colleges (cname, city, address, phone, afdate)
Fee Structure (course, yearsem, fee)
Payment (billno, admno, amount, pdate, purpose)

a. List the students who have not payed full fee
i) In your college ii) in all colleges

b. List the number of admissions in your class in every year.

c. List the students in the session who are nt in the colleges in the same city as they live in.

d. List the student in colleges in your city and also live in your city.

11. Subjects (paperid, subject, paper, papername)
Test (paperid, date, time, max, min)
Score (rollno, paperid, marks, attendence)
Students (admno, rollno, class, yearsem)

a. Create the above tables with the given specifications and Constraints

b. Insert about 10 rows as are appropriate to solve the following queries.

c. List the students who were present in paper of a subject.

d. List all roll numbers who have passed in first division.

e. Lit all students in BSC-II who have scored higher than average
i) in your college ii) in every college

f. List the highest score, average and minimum score in BSC-II
i) in your college ii) in every college

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PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources
TEXT BOOKS Recommended: Oracle PL/SQL Programming, Steven Feuerstein and Bill Pribyl, O'Reilly Media Oracle SQL*Plus, Jonathan Gennick, O'Reilly Media Oracle Database 12c SQL,Jason Price, McGraw-Hill Education Mastering Oracle SQL,Sanjay Mishra and Alan Beaulieu,O'Reilly Media SQL, PL/SQL: The Programming Language of Oracle,Ivan Bayross,BPB Publications A to Z Oracle(Hindi) Hemant Kumar Goyal,Ravi pocket books **Online Resources: (e- Resources/ e- Books/ e- Learning Portals)**

PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks: 50 Marks** **(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)**	
Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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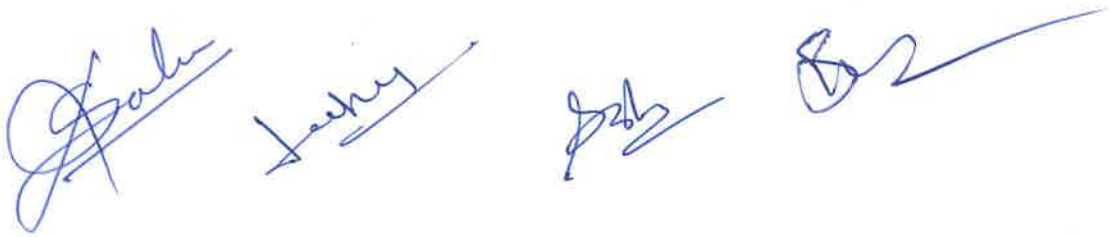

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FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25
B.Sc. (CS) -IV Semester (DSE)
Session 2024-25
COURSE CODE: BCS-403 (L)

DIGITAL ELECTRONICS AND MICROPROCESSOR

Part A: DIGITAL ELECTRONICS AND MICROPROCESSOR			
Program: **B.Sc. (CS)**	Class: **BCS –IV Semester**	Year: **2024**	Session:**2024-25**
Course Code	**BCS-403(L)**		
Course Title	**Digital electronics and microprocessor**		
Course Type	**DSE**		
Pre-requisite (if any)	None		
Course Objectives	The objective of this course is to impart a foundational understanding of Digital Electronics and Microprocessor Architecture.		
Course Outcomes	At the end of this course, the students will be able to: 1. Gain knowledge about essential logic families and acquire insights into the characteristics and advantages of Logic Gates. 2. Comprehend Computer Number Systems and Computer Codes. 3. Cultivate an understanding of Circuit design and simplification through Boolean logic and K-map. 4. Gasp the concepts of Combinational Logic and Sequential Logic circuits. Explore the internal architecture of microprocessors and understand their functions.		
Credit Value	**3 Credits**	**1 credit =15 Hours – Learning and Observation**	
Total Marks	**Maximum Marks :100**	**Minimum Passing Marks:40**	

Unit	Part B: Topics	No. of Lect.
I	Digital Electronics: Logic Families, Scale of Integration, RTL, DTL, TTL and its characteristics, Emitter Coupled Logic (ECL), CMOS Logic Family, NMOS and PMOS Logic, Comparison of Different Logic Families. Logic Gates Basics: AND Gate, OR Gate, NOT Gate, NOR Gate, NAND Gate, Exclusive-OR (XOR) Gate, Exclusive-NOR (XNOR) Gate, Truth Tables for Logic Gates, Truth Tables for Combinational Logic.	12
II	Data Representation: Decimal, Octal, Binary, Hexadecimal, Conversation from one number system to another number system, Binary Math: Binary Addition, Binary Subtraction, Binary Complements, One's & Two's Complement, Binary Subtraction using Two's Complement, Overflow and Underflow, Codes: ASCII code, EBCDIC codes, Grey codes, Excess-3, BCD codes, Error detection and Correcting codes	12
III	Boolean Algebra and Karnaugh Maps: Boolean algebra, Basic Boolean Law, Demerger's theorem, Map Simplification minimizing technique, Sum of products, Product of sums, Converting SOP & POS to Truth Table & Truth Table to Expression, K Map, Minimization techniques of Boolean Expression using K-Maps, "Don't Care" Conditions	12
IV	Combinational and Sequential Circuit: Introduction to Combinational and Sequential Circuit, Adders: Half adder & Full adder, Subtractor, Seven-Segment Displays Circuits, Encoder, Decoders, Multiplexers, De-multiplexers, Flip-Flop, D Latch, RS Flip Flop, J-K Flip-Flop, Registers	12
V	Central Processing Unit: CPU Organization, Instruction, Addressing Modes, Interrupts and Exceptions, Microprocessors: 8085-architecture, operation, pin configuration and functions, bus organization, control signal generation for external operations-fetch, IO/M, read/write, machine cycles and bus timings. Addressing mode, instruction set, Overview/concept of peripheral interfacing devices-8251, 8253, 8255 and 8279,Intel 8086, Brief Description of Intel Microprocessor	12

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Part C -Learning Resources
Text Books, Reference Books, Other Resources
BOOKS RECOMMENDED: 5. Computer Fundamentals: Architecture and Organization, B Ram New Age International Pvt Ltd 6. 8085 Microprocessors Architecture Application and Programming", Ramesh S. Goankar, PenramInternational,5th Edition 7. Modern Digital Electronics, R.P. Jain, TMH 8. Digital Principles & Application, Leach & Malvino, TMH 9. Digital Logic Design, Morries Mano, PHI 10. Digital Circuit & Design, S. Aligahanan, S. Aribazhagan, Bikas Publishing House. 11. Fundamentals of Digital Electronics & Microprocessor, Anokh Singh, A.K. Chhabra, S.Chand 12. Digital Circuits and Logic Design, Samuel Lee, PHI publication

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods:		
Maximum Marks:	**100 Marks**	
Continuous Comprehensive Evaluation (CCE):	**20 Marks**	
Semester End Exam (SEE):	**80 Marks**	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks	
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (02 each)	04 x 5 = 20 Marks
	Question - C: Short answer type question	05 x 5 = 25 Marks
	Question -D: Long answer type question	07 x 5 = 35 Marks
	Total	**= 80 Marks**

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Course Structure for CBCS
B.Sc. (CS)- V Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BCS 501(L)	DSC	Programming in PHP •NET	60	24	15	6			75	30	3	1		3
BCS 502(P)		Programming in PHP Lab •NET					25	10	25	10			1x2	1
BCS 503 (L)	DSE1	Cyber Security and Cyber Laws	80	32	20	8			100	40	3	1		4
BCS 504 (L)	DSE2	Cloud Computing	80	32	20	8			100	40	3	1		4
		TOTAL							300					12

Course Structure for CBCS
B.Sc. (CS)- VI Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BCS 601(L)	DSC	Web Technology	60	24	15	6			75	30	3	1		3
BCS 602(P)		Lab: Web Technologies					25	10	25	10			1x2	1
BCS 603 (L)	DSE1	Artificial Intelligence	80	32	20	08			100	40	3	1		4
BCS 604 (L)	DSE2	E-Commerce and its Application	80	32	20	08			100	40	3	1		4
		TOTAL							300	80				12

The syllabus for B.Sc. (CS) is hereby approved for the session 2024-25.

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25
B. Sc. (CS) – V Semester
Programming in .NET
Course Code– BCS-501 (L)

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

Part A: Programming in .Net			
Program: **B. Sc. (CS)**	Class: **B. Sc. (CS) –V Semester**	Year: **2024**	Session:**2024-2025**
Course Code	**BCS-501 (L)**		
Course Title	**Programming in .Net**		
Course Type	**Core Course**		
Pre-requisite (if any)	None		
Course Objectives	The objective of the VB.NET framework is to provide a robust, scalable, and easy-to-use platform for developing modern, high-performance Windows applications and services.		
Course Outcome	**On successful completion of the course, thestudent will be able to:** • **1:** Study and use of .NET framework and object-oriented programming. • Develop the console and GUI applications using .Net programming. • Evaluate the .NET framework namespace contents. • Understand the procedures, File I/O, Error handling and Message queues.		
Credit Value	**Theory: 3, Practical: 1**		
Total Marks	**Max. Marks: 60**	**Min Passing Marks: 24**	

Unit	**Part B – Topics**	**No. of Lecture**
1.	**UNIT – I : Introduction to .NET:** Overview of .net framework, Features and architecture, Managed Execution process, CLR, Common language specification, JIT Compilation, MSIL, Namespace, Assemblies, Metadata common type, System, Visual development and event driven programming , Cross language, Interoperability, Garbage collection.	9
2	**UNIT – II: Programming with .NET Framework:** Windows form: working with Visual Studio IDE, Creating a .NET solution, MDI application, Components and controls, Data types, Variable, Type conversions, Operators, Methods and events, Scope and lifetime of variables, Creating Enumerations.	9

3	**UNIT – III : Control Structures:** Control Structures: conditional statement, Loops, Arrays, Types of methods, Method data, Creating Sub Procedures and Function, Introduction to exception handling try catch statement, finally statement, throw, user defined Exception.	9
4	**UNIT – IV: GUI Programming:** GUI Programming with window forms, Showing & hiding, Textbox, RichText box, Label, Button, Listbox, Combobox, Checkbox, Picturebox, Radio button, Toggle button, Panel, Groupbox, Scrollbar, Timer, Dialog boxes, OpenfileDialog, Save File dialog, Print dialog, Front dialog, Color dialog, Designing menus and sub menus, Msgbox and Inputbox.	9
5	**UNIT – V: Database Programming with ADO.net** – ADO .Net Architecture, .Net data provider, dataset components, creating database application using Window forms (Database connectivity through ADO.Net), Accessing data using server explorer, Data Adapters and Data sets, Command & Data reader, Data bind controls, displaying data in data grid.	9

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Part C -Learning Resources

Text Books, Reference Books, Other Resources

BOOKS RECOMMENDED:

1. Visual Basic .Net Complete- by BPB Publications , New Delhi
2. The Complete Reference VB.Net –by Jeffery R. Shapiro , Tata Mcgraw Hill. MSDN online – by Microsoft
3. Professional VB.Net 2003 – by Bill Evjen & others , Wiley Dreamtech India(P) Ltd. New Delhi
4. Bill Evjen, Jason Beres, et.al, Visual Basic .Net programming, Wiley Dreamtech India (p) Ltd.
5. Fergal Grimes, Microsoft .NET for programmers, Shroff Publishers & Distributors (P) Ltd.
6. Thuan Thai & Hoang Q.Lam, .NET Framework Essentials, Shroff Publishers & Distributors (P) Ltd.

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **20 Marks** **Semester End Exam (SEE):** **80 Marks**		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)		Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) Question - C: Short answer type question Question -D: Long answer type question **Total**	04 x 5 = 20 Marks 05 x 5 = 25 Marks 07 x 5 = 35 Marks **= 80 Marks**

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FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25
Lab Course
B.Sc. (CS)– V Semester
Programming in .NET Lab
Course Code– BCS-502 (P)

PART A: INTRODUCTION			
Program:		Class: B.Sc. (CS) Semester -V Sem	Session:2024-2025
1	Course Code	BCS-502 (P)	
2	Course Title	Programming in .NET Lab	
3	Course Type	Lab Course	
4	Course Learning Outcome (CLO)	This Course will enable the students to: To learn the basic skill of .NET programming.	
5	Credit Value	1 Credit	1 credit =15 Hours – Learning and Observation
6	Total Marks	Maximum Marks: 50	Minimum Passing Marks: 20

PART B: CONTENT OF THE COURSE	
S. No.	List of Experiments

1) Write a program to addition, subtraction, multiplication and division of any two numbers.
2) Write a program to find the maximum between three numbers.
3) Write a program to check whether a number is negative, positive or zero.
4) Write a program to check whether a year is a leap year or not.
5) Percentage < 40%: Grade F
6) Design an application to input basic salary of an employee and calculate its Gross salary following:
    a. Basic Salary <= 10000: HRA = 20%, DA = B0%
    b. Basic Salary <n20000: HRA = 30%, DA = 90%
    c. Basic Salary> 20000: HRA = 30%, DA = 95%
7) Design an application to input electricity unit charges and calculate the given condition:
    a. For first 50 units Rs. 0.50/unit
    b. For next 100 units Rs. 0.75/unit
    c. For next 100 units Rs. 1.20/unit
    d. For unit above 250 Rs. 1.50/unit
8) An additional surcharge of 20% is added to the bill.
9) Write a program to convert decimal to binary number system using bitwise operators.
10) Write a program to swap two numbers using the bitwise operator.
11) Write a program to create Simple Calculator using a select case.
12) Write a program to find the sum of all natural numbers between 1 to n.
13) Write a program to enter any number and print its reverse.
14) Write a program to enter any number and check whether the number is palindrome or not.
15) Write a program to check whether a number is Armstrong number or not
16) Write a program to print Fibonacci series up to n terms.
17) Write a program to print Pascal triangles up to n rows.
18) Write a program to print all negative elements in an array.
19) Design a digital clock using timer control
20) Create an application that offers various food items to select from check boxes and a mode of payment using a radio button. It then displays the total amount payable.
21) Create an application to implement the working of Context menu on textbox
22) Write a program to illustrate all functionalities of list box and combo box.
23) Write a program for temperature conversion using a radio button.
24) Write a program to launch a rocket using Picture Box and Timer control
25) Write a program to change the back color of any control using a scroll box.
26) Write a program to search an element for a one dimensional array.
27) Design a menu such that it contains submenu such as Addition, Subtraction, Scalar Multiplication, Transpose of two metrics.
28) Write a program to find greatest among three given number using user define procedures
29) Write a program to check whether given number neon or not using user defined function
30) Write a program to check whether a given number is Niven or not using procedure.
31) Write a program to check whether a given number is duck number or not
32) Write a program to check whether a given number is a spy number or not.
33) Write a program to check whether a given number
34) Design the following application using radio button and checkbox:
35) Develop an application which is similar to notepad using menus.

36) Develop an application for facilitating purchasing order.
37) Develop an application for a billing system in a coffee shop.
38) Develop an application which is similar to login form.
39) Define structure student structure student has written member for storing name roll number name of three subjects and marks with member function to store and print data.
40) create a class circle with data member radius provide member function to calculate area driver class fare from class circle provide member function to calculate volume derived class cylinder from class is fair with additional data member for height and member function to calculate volume
41) Write a program that implements the concept of encapsulation.
42) Write a program to demonstrate the concept of function overloading.
43) Create a class student having a data member to store roll number name of the student name of three subject Max marks, Min marks, obtained marks. Declare an object of class. Provide facilities to input data in data members and display result of students
44) Create a class array having an array of integer having five elements at data member provide following facilities: a) constructor to get number in array element b) sort the elements
45) Create a table for employees and write a program using a data set to add, delete , edit and navigate records.
46) Write a program to access a database using ADO.NET and display key columns in the combo box or list box when an item is selected in it its corresponding records are shown in data grid control.
47) Write a program to calculate factorial of a number using user defined procedure.

Note: This is a tentative list; the teachers' concern can add more program as per requirement.

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GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)

SYLLABUS FOR AY 2023-24

B. Sc. (CS) – V Semester

Cyber Security and Cyber Law

Course Code– BCS-503 (L)

Max Mark: 60 **Min Marks: 24**

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

Part A: Cyber Security and Cyber Law			
Program: **B. Sc. (CS)**	Class: **B. Sc. (CS) –V Semester**	Year: **2024**	Session:**2024-25**
Course Code	**BCS-503 (L)**		
Course Title	**Cyber Security and Cyber Law**		
Course Type	**Elective**		
Pre-requisite (if any)	Basic Knowledge of Networking		
Course Objectives			
Course Outcome	**On successful completion of the course, thestudent will be able to:** • Understand the fundamental concepts in cyber security and distinguish among the attacks, threats and vulnerabilities. • Identify, differentiate and explain different cyber crimes and frauds. • Understand the concept of Cyber security issues and challenges associated with it. • Understand the cyber crimes, their nature, legal remedies and how to report the crimes through available platforms and procedures.		
Credit Value	**Theory: 4**		
Credit Value	**1 Credit**	**1 credit =15 Hours – Learning and Observation**	
Total Marks	**Maximum Marks: 50**	**Minimum Passing Marks: 20**	

Unit	Part B – Topics	No. of Lecture
1.	**UNIT – I : Introduction:** Computer Network, Basic of Computer Security, Defining Cyberspace, Architecture of cyberspace, Internet, World wide web, Internet society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security, Cyber Physical System Security,	**12**

2	**UNIT – II: Classification of cyber crimes**, Common cyber crimes- cyber crime targeting computers and mobiles, cyber crime against women and children, financial frauds, social engineering attacks, malware and ransomware attacks, zero day and zero click attacks, Cybercriminals modus-operandi, Reporting of cyber crimes, Remedial and mitigation measures.	**12**
3	**UNIT – III : Authentication:** Vulnerability and vulnerability assessment, Intrusion Detection and Intrusion Prevention System, Introduction of Authentication, User Authentication Methods, Biometric Authentication Methods.	**12**
4	**UNIT – IV: Different Securities:** Window Security, Smartphone Security, Browser Security, Web Security, Email Security, Wi-Fi Security, and Social Media Security: Challenges, opportunities and pitfalls in online social network, Best practices for the use of Social media, Introduction to digital payments, Components of digital payment and stakeholders, Digital payments related common frauds and preventive measures. RBI guidelines on digital payments and customer protection in unauthorized banking transactions.	**12**
5	**UNIT – V: Cyber Law Basics:** Information Technology Act 2000-Amendments; Laws regarding posting of inappropriate content, Relevant provisions of Payment Settlement Act 2007, Cybercrimes and offenses dealt with IPC, RBI Act, IPR in India.	**12**

Part C -Learning Resources
Text Books, Reference Books, Other Resources

BOOKS RECOMMENDED:

1) Data communication and Networking by B. Forouzan, TMH.
2) Fundamentals of Network Security by E. Maiwald, McGraw Hill.
3) An unofficial guide to ethical hacking by Ankit Fadia, trinity publisher.
4) An ethical guide to hacking mobile phones by Ankit Fadia, trinity publisher.
5) Computer Network Security and Cyber Ethics by Siva Ram Murthy,B.S. Manoj , McFarland and Company , INC
6) Cyber criminology: Exploring Internet Crimes and Criminal Behavior by K. Jaishankar, CRC press.
7) Cyber Crime Impact in the New Millennium, by R. C Mishra , Auther Press. Edition 2010.
8) Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
9) Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson , 13th November, 2001)
10) Electronic Commerce by Elias M. Awad, Prentice Hall of India Pvt Ltd.
11) Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
12) Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **20 Marks** **Semester End Exam (SEE):** **80 Marks**		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks	
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) Question - C: Short answer type question Question -D: Long answer type question **Total**	04 x 5 = 20 Marks 05 x 5 = 25 Marks 07 x 5 = 35 Marks **= 80 Marks**

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GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM

DEPARTMENT OF COMPUTER SCIENCE

COURSE CURRICULUM 2024-25

V SEMESTER : Theory Course

DSE2

PART A: INTRODUCTION				
Program: B.Sc. (UG)		Class: B.Sc. (CS) Semester - V		Session:2024-2025
1	Course Code	BCS-504		
2	Course Title	DSE2- Cloud Computing		
3	Course Type	Theory		
4	Course Learning Outcome (CLO)	This Course will enable the students to: • Describe cloud computing concepts. • Identify various cloud services. • Evaluate various cloud delivery models. • Assess cloud characteristics and service attributes, for compliance with enterprise objectives. • Contrast the risks and benefits of implementing cloud computing		
5	Credit Value	4 Credits	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks :100		Minimum Passing Marks:40

PART B: CONTENT OF THE COURSE		
Total no. of Teaching/ Learning Periods = 60 Periods (60 Hours)		
Unit	**Topics (COURSE CONTENTS)**	**No. of Periods**
I	**Fundamental Cloud Computing:** Concepts, Terminology, Technologies, Benefits, Challenges, SLAs and business cost metrics associated with cloud computing, SaaS, IaaS, PaaS delivery models, Common cloud deployment models and cloud characteristics, Various applications of cloud computing.	12
II	**Cloud Architecture:** The technology architecture of cloud platforms and cloud-based solutions and services and their utilization via a set of cloud computing design patterns, Hybrid cloud deployment models, Compound design patterns and solution architectures that span cloud and on-premise environments.	12
III	**Cloud Security & Governance:** The cloud security mechanisms, cloud security architecture, A set of security design patterns, The definition of cloud governance precepts, Roles, Practices and processes, Common governance challenges and pitfalls specific to cloud computing.	12
IV	**Cloud Storage:** The cloud storage devices, Structures and technologies, cloud storage mechanisms, Persistent storage, Redundant storage, Cloud-attached storage, Cloud-remote storage, Cloud storage gateways, Cloud storage brokers, Direct Attached Storage (DAS), Network Attached Storage (NAS), Storage Area Network (SAN), Various cloud storage-related design patterns.	12
V	**Cloud Virtualization & Microservices:** Core topic areas pertaining to the fundamental virtualization mechanisms and types used within contemporary cloud computing platforms are explored along with various key performance indicators and related metrics, Microservices of Cloud Computing.	12
PART C - LEARNING RESOURCES		
Text Books, Reference Books, Other Resources		

Text Books :

1. Cloud Computing: Concepts, Technology & Architecture, Erl, Pearson Education India; 1 edition, 2014
2. Cloud Computing: Fundamentals By Timothy Chou's.

Reference Books:

1. The Basics of Cloud Computing: Understanding the Fundamentals of Cloud Computing in Theory and Practice 1st Edition byDerrick Rountree (Author), Ileana Castrillo (Author)

2. —Cloud Computing, A Practical Approachl Toby Velte, Anthony Velte, Robert Elsenpeter, McGraw-Hill Osborne Media; 1 edition [ISBN: 0071626948], 2009.

Online Resources: (e- Resources/ e- Books/ e- Learning Portals):

1. https://www.javatpoint.com/cloud-computing
2. https://www.geeksforgeeks.org/cloud-computing-tutorial/
3. https://www.tutorialspoint.com/cloud_computing/index.htm
4. https://www.w3schools.com/aws/aws_cloudessentials_cloudcomputing.php
5. https://www.simplilearn.com/tutorials/cloud-computing-tutorial
6. https://intellipaat.com/blog/cloud-computing-tutorial/

PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods:	
Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04 x 5 = 20 Marks Question - C: Short answer type question 05 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 80 Marks**

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GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25

B. Sc. (CS) – VI Semester
Web Technology
Course Code– BCS-601 (L)

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

Part A: Web Technology			
Program: **B. Sc. (CS)**	Class: **B. Sc. (CS) – VI Semester**	Year: **2024**	Session:**2024-2025**
Course Code	**BCS-601 (L)**		
Course Title	**Web Technology**		
Course Type	**Core Course**		
Pre-requisite (if any)	None		
Course Objectives	Web technologies equip learners with the skills to create well-structured, visually appealing, and interactive web applications. They can efficiently handle both client-side and server-side development, making them versatile web developers.		
Course Outcome	**On successful completion of the course, thestudent will be able to:** • Analyze a web page and identify its elements and attributes. • Create web pages using HTML, CSS, JAVASCRIPT, XHTML • Build dynamic web pages using JavaScript (Client-side programming). • Build interactive web applications using PHP.		
Credit Value	**3 Credits**	**1 credit =15 Hours – Learning and Observation**	
Total Marks	**Maximum Marks :100**	**Minimum Passing Marks:40**	

Unit	Part B – Topics	No. of Lecture
1.	**UNIT – I :** Introduction: Fundamentals of web technology: Webpages, website, browser, client, web servers, Basics of HTML CSS, Scripting Languages, MySQL, PHP etc., protocols governing the web, Web applications. Web Publishing: Introduction, Domain Name Registration, choosing a web host and signing up for an Account, web hosting. IDE for web development.	9
2	**UNIT – II: HTML:** Introduction, Basic formatting tags: heading, paragraph, line break, bold, italic, underline, superscript, subscript, font and image. Different attributes like align, color, bgcolor, font face, border, size, Navigation Links using anchor tag: internal, external, mail and image links, Link to different web pages and sections. Lists: ordered, unordered and definition, Table tag, image tag, iframe tag. HTML Form controls: form, text, password, text area, button, checkbox, radio button, select box, hidden controls, Frameset and frames. Basics of DHTML, introduction of XML and its uses. Introduction of AJAX.	9
3	**UNIT – III : CSS**: Introduction and features of CSS, CSS syntax, Creating Style sheets, CSS selectors (simple selector, combinator selectors, pseudo-class-selectors, pseudo-element-selectors, attribute selector), different ways to insert the CSS, different styling attributes and their settings like color, background, font, text, margin, position, border etc.	9
4	**UNIT – IV: Scripting Languages:** JavaScript: introduction and features of java script, Syntax & Conventions, Variables, Expression, Branching & Looping, Function, Array, Objects, Events and Document Object model, Alerts, prompts and conforms, VB Script Basics.	9
5	**UNIT – V:PHP:** Introduction and features of PHP, data types, operators, control statements and looping, functions, array, string and string functions, object oriented, programming features of PHP: class-objects, abstraction, encapsulation, constructor, destructor, inheritance, polymorphism etc., Exception Handling. Handling HTML forms with PHP, Working with files and directories, session and cookies, PHP functions for Database Connectivity and basic operation with MySQL.	9

Part C -Learning Resources
Text Books, Reference Books, Other Resources
BOOKS RECOMMENDED: 1) Xavier, C, Web Technology and Design, New Age International. 2) Ivan Bayross, HTML, DHTML, Java Script, Perl & CGI, BPB Publication. 3) Ramesh Bangia, Internet and Web Design, New Age International. 4) Ullman, PHP for the Web: Visual QuickStart Guide, Pearson Education. 5) Jim Converse & Joyce Park, PHP & MySQL Bible, Wiley India Publication 6) Chuck Musiano & Bill Kenndy, O Reilly, HTML The Definitive Guide 7) Joseph Schmuller, Dynamic HTML, BPB, 2000. 8) Deitel, Deitel, Goldberg, Internet & World Wide Web How to Program,Pearson Education, 9) Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods:		
Maximum Marks:	**100 Marks**	
Continuous Comprehensive Evaluation (CCE):	**20 Marks**	
Semester End Exam (SEE):	**80 Marks**	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks	
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) Question - C: Short answer type question Question -D: Long answer type question **Total**	04 x 5 = 20 Marks 05 x 5 = 25 Marks 07 x 5 = 35 Marks **= 80 Marks**

Name & Signature of Members of Board of Studies

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25

B. Sc. (CS) – VI Semester

Web Technology Lab

Course Code– BCS-601 (P)

PART A: INTRODUCTION				
	Program:	Class: B.Sc. (CS) Semester -		Session:2024-2025
1	Course Code	BCS-601 (P)		
2	Course Title	Web Technology Lab		
3	Course Type	Lab Course		
4	Course Learning Outcome (CLO)	This Course will enable the students to:		
5	Credit Value	1 Credit	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks: 50		Minimum Passing Marks: 20

PART B: CONTENT OF THE COURSE	
S. No.	List of Experiments

List of Programs

HTML

1. Write HTML code to create the following table:

Class	Subject 1	Subject 2	Subject 3
BCA-I	Visual Basic	PC Software	Electronics
BCA-II	C++	DBMS	English
BCA-III	Java	Multimedia	CSA

2. Write HTML code to create the following lists:
   - C
   - C++
   - Fortran
   - COBOL
3. Write HTML code to create the following lists:
   1. Java
   2. Visual Basic
   3. Basic
   4. COBOL
4. Write HTML code to demonstrate hyper linking between two web pages.
5. Create a marquee & also insert an image.
6. Write HTML code to create a frame in HTML with 3 columns (width= 30%, 30%, 40%) and put hyperlinked pictures inside each.
7. Write HTML code to create a webpage with a blue background and print the following text with white background.
   "Hello Word "
8. Write HTML code to create the following table:

Course	OC	BC	MB	SC/ST	Total
Computer Science	**9**	**18**	**5**	**5**	**37**
Commerce	**14**	**25**	**6**	**5**	**50**
Grand Total					**87**

9. Write HTML code to create the following table:

Maruti		Tata		Ford	
Model	**Price**	**Model**	**Price**	**Model**	**Price**
Maruti 800	2 Lac	Sumo	2 Lac	Icon	5 Lac
Omni	3 Lac	Scorpio	3 Lac	Gen	2 Lac

10. Write HTML code to create the following table:

Pandit Ravishankar Shukla University		
Name	**Roll No.**	**Class**
Rahul	40	BCA-I
Preeti	85	BCA-I
Priya	74	BCA-I
Richa	95	BCA-I

11. Write HTML code to create the following table:

Students Record

Name	Subject	Marks
Arun	Java	70
	C	80
Ashish	Java	75
	C	69

12. Write HTML code to create the following table and also insert an image in the webpage.

Subject	Max	Min	Obtain
Java	100	33	75
Multimedia	100	33	70
Operating System	100	33	68
C++	100	33	73

13. Write HTML code to create the following table:

Name Roll No.		Rahul 101	
Subject	**Max**	**Min**	**Obtain**
Java	100	33	75
Multimedia	100	33	70

14. Write HTML code to create a form as the following:

Enter Name :
Enter Roll No. :
Enter Age :
Enter DOB :

15. Write HTML code to create the following form:

User Name :
Password :
When user types characters in a password field, The browser displays asterisks or bullets instead of character.
Submit

16. Write HTML code to create Student Registration Form
17. Write HTML code to create Contact Form
18. Write HTML code to insert Audio & Video in HTML
19. Write HTML code for the following equations:

$C_2H_5OH+PCL_5=C_2H_5CL+POCL_3+HCL$

$4H_3PO_3=3H_3PO_4+PH_3$

$PCL_3+CL_2=PCL_5$

20. Write the HTML code to display the following list:
    - Actors
        - Bruce Wills
        - Gerand Butler
        - Vin Diesel
        - Bradd Pitt
        - Paul Walker

- Jason Statham
- Actress
  - Julia Roberts
  - Angelina Jolie
  - Kate Wins let
  - Cameron Diaz

21. Write the HTML code to display the following list:
    1. Cricket Players
        A. Batsman
            i. Sachin Tendulkar
            ii. Rahul Dravid
            iii. Virendra Sehwag
        B. Bowlers
            i. Kumble
            ii. Zaheer Khan
            iii. Balaji
        C. Spinner
            i. Harbhajan
            ii. Ravindra Jadeja
            iii. Kartik

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JavaScript

1. Write a java script, to print prime numbers from 1 and 50.
2. Write a script to get the largest value in an array.
3. Write a function to calculate the factorial of a number (a non-negative integer).
4. Write a script to demonstrate data validation.
5. Write a program to print dates using JavaScript.
6. Write a program to Sum and Multiply two numbers using JavaScript.
7. Write a program to validate data of HTML page.
8. Write a program to demonstrate function.

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DHTML

1. Create a web page which shows the changes of header dynamically.
2. Create a webpage which explains the use of relative positioning.
3. Display an alert box to alert the x and y coordinates of the cursor.
4. Write a program to create a dynamic web page.

****

PHP

1. write script using for loop to print all integer between -10 to 10
2. write script to construct the following pattern, using nested for loop

```
1
1 2
1 2 3
1 2 3 4 5
```

	3. Write a PHP script to get the largest key in an array. 4. Write a function to calculate the factorial of a number (a non-negative integer). 5. Write a PHP script to check string for palindrome. 6. Write a PHP script to collect the data from the registration form designed in HTML, and submit it to the database. 7. Write a PHP script to read the data from the database and display it into the web page in tabular form.

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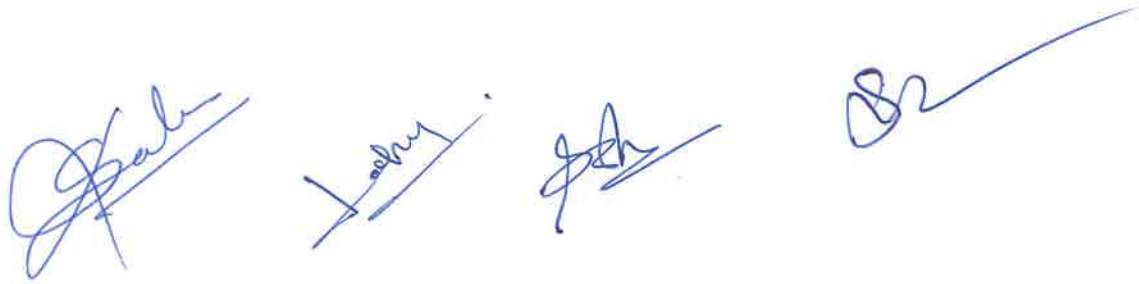

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources
TEXT BOOKS Recommended: 1) Xavier, C, Web Technology and Design, New Age International. 2) Ivan Bayross, HTML, DHTML, Java Script, Perl & CGI, BPB Publication. 3) Ramesh Bangia, Internet and Web Design, New Age International. 4) Ullman, PHP for the Web: Visual QuickStart Guide, Pearson Education. 5) Jim Converse & Joyce Park, PHP & MySQL Bible, Wiley India Publication 6) Chuck Musiano & Bill Kenndy, O Reilly, HTML The Definitive Guide 7) Joseph Schmuller, Dynamic HTML, BPB, 2000. 8) Deitel, Deitel, Goldberg, Internet & World Wide Web How to Program,Pearson Education,
PART D: ASSESSMENT AND EVALUATION
Suggested Continuous Evaluation Methods: **Maximum Marks: 50 Marks** **(Will include Internal assessment, Lab records and End Semester Viva/Voce and performance)**

Semester End Exam (SEE)	**Laboratory performance: As per Dept. (LOCF)**

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FOUR YEAR UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM 2024-25

B. Sc. (CS) – VI Semester

Artificial Intelligence

Course Code– BCS-603 (L)

Max Mark: 60 **Min Marks: 24**

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

Part A: Artificial Intelligence			
Program: **B. Sc. (CS)**	Class: **B. Sc. (CS) –VI Semester**	Year: **2024**	Session:**2024-25**
Course Code	**BCS-603 (L)**		
Course Title	**Artificial Intelligence**		
Course Type	**Elective**		
Pre-requisite (if any)	None		
Course Objectives	Learn the Foundation of fundamental concepts in Artificial Intelligence.		
Course Outcome	**On successful completion of the course, thestudent will be able to:** • Understand the various searching techniques, constraint satisfaction problems and example problems- game playing techniques. • Apply techniques to solve the AI problems. • Provide a strong foundation of fundamental concepts in Artificial Intelligence. • Provide a basic exposition to the goals and methods of Artificial Intelligence. • Understand real world applications of AI.		
Credit Value	**Theory: 4**		
Credit Value	**3 Credits**	**1 credit =15 Hours – Learning and Observation**	
Total Marks	**Max. Marks: 100**	**Min Passing Marks: 40**	

Unit	Part B – Topics	No. of Lecture
1.	**UNIT – I :** Overview of Artificial Intelligence (AI), Foundations of AI, Areas and Applications of AI in various domains, AI Agents: Meaning, Types, Environments, Examples.	**12**

2	**UNIT – II: Problem Solving:** Problem Solving as State Space Search, Production System, Some AI Classical Problems: Water-Jug Problem, Cannibal-Missionaries Problem, Tower of Hanoi, Tic-Tac-Toe, 8-Puzzle Problem, Search Techniques: Breadth First Search, Depth-First Search, Hill-Climbing, Best-First Search, A* Algorithms.	**12**
3	**UNIT – III :** AI Programming languages: Introduction to LISP, Basic list manipulation functions, Input/output and local variables, Lists and Arrays, simple program in LISP, Introduction to PROLOG.	**12**
4	**UNIT – IV**: Knowledge Representation: What is knowledge?, Approaches and issues, Knowledge representation techniques: Frame, Conceptual dependency, Semantic Net, Scripts etc., Propositional Logic, First order, Propositional Logic (FOPL), Conversion to clausal form, Inference rules, Resolution principal.	**12**
5	**UNIT – V: Expert Systems:** Introduction: Components and applications of Expert System, Knowledge, **fuzzy logic**: Introduction to Fuzzy Logic: Fuzzy Set Theory, Fuzzy Arithmetic, Fuzzy Relations, Possibility Theory, Fuzzy Inference, Approximate Reasoning. Development: Steps, tools, evaluation.	**12**

Part C -Learning Resources

Text Books, Reference Books, Other Resources

BOOKS RECOMMENDED:

1) Introduction to Artificial Intelligence and Expert Systems, Dan W. Patterson, PHI Publication.
2) Artificial Intelligence, Elaine Rich and Kevin Knight TMH publication.
3) Artificial Intelligence and machine learning, Vinod Chandra S.S., Anand Hareendrn S., PHI learning private Ltd.
4) Foundations of Artificial Intelligence and Expert Systems, Macmillan Series in Computer Science, V.S. Jankiraman, K. Sarukesi and P. Gopala Krishnan
5) Fuzzy Logic with Engineering Applications, Book by Timothy J. Ross
6) Principles of Soft Computing, by S. N. Sivanandam and S. N. Deepa

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **20 Marks** **Semester End Exam (SEE):** **80 Marks**		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)		Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04 x 5 = 20 Marks Question - C: Short answer type question 05 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total** **= 80 Marks**	

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FOUR YEAR UNDERGRADUATE PROGRAM

DEPARTMENT OF COMPUTER SCIENCE

COURSE CURRICULUM 2024-25

VI SEMESTER : Theory Course

DSE2

PART A: INTRODUCTION				
Program: BSC (UG)		**Class: BSc(CS)**	**Semester - VI**	**Session:2024-2025**
1	**Course Code**	**BCS-604**		
2	**Course Title**	**DSE2- E-Commerce and its Application**		
3	**Course Type**	Theory		
4	**Course Learning Outcome (CLO)**	**This Course will enable the students to:** • Analyze the impact of E-commerce on business models and • strategy. • Describe the major types of E-commerce. • Explain the process that should be followed in building an • E-commerce presence. • Identify the key securit threats in the E-commerce environment.		
5	**Credit Value**	**4 Credits**	**1 credit =15 Hours – Learning and Observation**	
6	**Total Marks**	**Maximum Marks :100**		**Minimum Passing Marks:40**

PART B: CONTENT OF THE COURSE

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 60 Periods (60 Hours)

Unit	Topics (COURSE CONTENTS)	No. of Periods
I	History of E-commerce and Indian Business Context: E-Commerce –Emergence of the Internet – Emergence of the WWW – Advantages of E-Commerce – Transition to E-Commerce in India – The Internet and India – E-transition Challenges for Indian Corporate. Business Models for Ecommerce: Business Model – E-business Models Based on the Relationship of Transaction Parties - E-business Models Based on the Relationship of Transaction Types.	12
II	Enabling Technologies of the World Wide Web: World Wide Web – Internet Client-Server Applications –Networks and Internets – Software Agents – Internet Standards and Specifications – ISP. e-Marketing :Traditional Marketing – Identifying Web Presence Goals – Online Marketing – E-advertising – E-branding.	12
III	E-Security: Information system Security – Security on the Internet – E-business Risk Management Issues – Information Security Environment in India. Legal and Ethical Issues : Cybers talking – Privacy is at Risk in the Internet Age – Phishing – Application Fraud – Skimming – Copyright – Internet Gambling – Threats to Children.	12

IV	e-Payment Systems: Main Concerns in Internet Banking – Digital Payment Requirements – Digital Token-based e-payment Systems – Classification of New Payment Systems – Properties of Electronic Cash – Cheque Payment Systems on the Internet – Risk and e-Payment Systems – Designing e-payment Systems – Digital Signature – Online Financial Services in India - Online Stock Trading.	12
V	Information systems for Mobile Commerce: What is Mobile Commerce? – Wireless Applications –Cellular Network – Wireless Spectrum – Technologies for Mobile Commerce – Wireless Technologies –Different Generations in Wireless Communication – Security Issues Pertaining to Cellular Technology. Portals for E-Business: Portals – Human Resource Management – Various HRIS Modules.	12

PART C - LEARNING RESOURCES

Text Books, Reference Books, Other Resources

TEXT BOOK:

1. P.T.Joseph, S.J., *"E-Commerce - An Indian Perspective"*, PHI 2012, 4th Edition.

REFERENCE BOOKS:

1. David Whiteley , "*E-Commerce Strategy, Technologies and Applications*", Tata McGraw Hill, 2001.
2. Ravi Kalakota, Andrew B Whinston, "*Frontiers of Electronic Commerce*", Pearson 2006, 12th Impression.

WEB REFERENCES:

- https://www.docsity.com/en/e-commerce-notes-pdf-lecture-notes-universitylevel/2484734/
- https://magnetoitsolutions.com/blog/advantages-and-disadvantages-of-ecommerce
- https://www.researchgate.net/publication/320547139ECommerce_Merits_and_Demerits_A_Review_Paper.

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks

Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04 x 5 = 20 Marks Question - C: Short answer type question 05 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total =** **80 Marks**

Name & Signature of Members of Board of Studies

The Course Curriculum 2024-25 for Program B. Sc. (CS) - II, III, IV, V, VI Semesters on 05-07-2024 is hereby approved for the Session 2024-25.

Name and Signatures:

Subject Expert	Departmental members:
Subject Expert	1. H.O.D- Dr. Sanat Kumar Sahu
Subject Expert	2. Mr. Dileep Kumar Sahu
Representative from Industry/entrepreneur	3. Dr. Latika Tamrakar
Student representative	
Other prof. from Science faculty	