

**SYLLABUS FOR  
THE FOUR-YEAR UNDERGRADUATE  
PROGRAMME (FYUGP)**

**As per provision of NEP-2020 to be implemented from  
Academic Year 2022 onwards**



**Session 2025-26**

**Semester – I & II**

**DEPARTMENT OF COMPUTER SCIENCE**

**GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE,  
RAJNANDGAON (C.G.)**

## B. SC. (Multiple Major) – DEGREE COURSE (Session 2025-26)

### Major – Computer Science

	SEMESTER	COURSE TYPE	Theory/ Practical	COURSE CODE	PAPER TITLE	CREDIT			Max Marks	ESE	IA
						L	T	P			
<b>FIRST YEAR</b>	<b>I</b>	DSC	Theory	CSSC- 01T	Computer Fundamental and Operating System	3	0	0	100	70	30
		DSC-LAB	Practical	CSSC- 01P	Lab 1 – Operating System(DOS, Windows, Linux)	0	0	1	50	35	15
		DGE	Theory	CSGE-01T	Computer Fundamental and Operating System	3	0	0	100	70	30
		DGE-LAB	Practical	CSGE- 01 P	Lab 1 – Operating System(DOS, Windows, Linux)	0	0	1	50	35	15
		VAC	Theory	CSVAC-01	Artificial Intelligence	2	0	0	50	35	15
	<b>II</b>	DSC	Theory	CSSC- 02T	Programming in C++	3	0	0	100	70	30
		DSC-LAB	Practical	CSSC- 02P	Lab 2 : Programming in C++	0	0	1	50	35	15
		DGE	Theory	CSGE-02T	Programming in C++	3	0	0	100	70	30
		DGE-LAB	Practical	CSGE- 02 P	Lab 2 : Programming in C++	0	0	1	50	35	15
		SEC	Practical	CSSEC- 01	Multimedia and Animation	0	0	2	50	35	15

**DSC- Discipline Specific Course**

**DGE – Discipline Generic Elective**

**VAC- Value Addition Course**

**SEC – Skill Enhance Course**

**CIA- Continuous Internal Assessment**

**ESE – End Semester Exam**

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**COURSE CURRICULUM**

PART- A: Introduction				
Program: Bachelor in Science (CS) (Certificate / Diploma / Degree/Honors)			Semester - I	Session: 2024-2025  Session 2025-26
1	Course Code	CSSC-01T		
2	Course Title	Computer Fundamental and Operating System		
3	Course Type	DSC (Discipline Specific Course)		
4	Prerequisite	As per program		
5	Course Learning Outcomes (CLO)	After Completing this course, students will be able to: <ul style="list-style-type: none"><li>• Study and use of basic concepts and terminology of information technology.</li><li>• Organize files and documents on storage devices.</li><li>• Acquire knowledge of ICT and Internet applications.</li><li>• Develop information technology solutions by evaluating user requirements in advance trends of IT.</li><li>• Acquire knowledge of MS-Excel, MS-PowerPoint and MS-Access.</li></ul>		
6	Credit Value	3 Credits	Credit = 15 Hours - Learning & Observation	
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40	
PART -B: Content of the Course				
Total No. of Teaching–Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)				
Unit	Topics (Course contents)			No. of Period
I	<b>Indian knowledge System and Computer Science :</b> Number System in India-Historical evidence, Salient aspect of Indian Mathematics, Bhuta-Samkhya system, Katapayadi system, pingala and the binary system, Sulbha Sutra as modern arithmetic and numerical mathematics. <b>Fundamental of Computer:</b> History of computer, Generation of computer, Types of Computers, Block diagram of CPU, Digital and Analogue computers and its evolution. Major components of digital computers, Types of digital computers, Memory addressing capability of CPU, Microprocessors, Single chip Microcomputer, Users interface, hardware, software and firmware, Number system & Computer Codes.			13
II	<b>Peripheral devices:</b> I/O Devices-KeyBoard, Mouse, Monitor, Impact and Non-Impact Printers, Plotters, Scanner, other Input/output devices I/O Port, Programmable and Non-Programmable I/O port, Inbuilt I/O ports, Parallel and Serial ports, USB, IEEE 1394, AGP, Serial data transfer scheme, Microcontroller, Signal Processor, I/O processor, Arithmetic Processor.			11
III	<b>Memory:</b> Memory hierarchy, Primary and Secondary Memory, Cache memory, Virtual Memory, Direct Access storage devices (DASD) Destructive and Non-destructive Readout, Program and data memory, Memory Management Unit (MMU).			10
IV	<b>Operating System Concepts:</b> Evolution of Operating Systems: Types of operating systems. Introduction to DOS, History Booting process of DOS, Internal and External commands of DOS, File Structure of DOS. Windows Operating System: History, Version of Windows, Basics of Windows, Windows Explorer, Windows Accessories, Control Panel. Introduction to Linux Operating System, Structure of Linux, Linux command cd, md, rm, mv, cp, ls, cat, find, grep, head, tail.			11
Keywords	Computer, Input /Output Devices, Memory, Operating System, DOS, Linux.			
Name and Signature of Convener & Members of CBoS:				
<div>Dr. H.S. Hota Chairman</div> <div>Ananta Kumar</div> <div>Smita</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta Kumar</div> <div>Dr. Ananta 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## **PART-C: Learning Resources**

### **Text Books, Reference Books and Others**

#### **Text Books Recommended:**

- P.K. Sinha, Computer Fundamentals, BPB Publication, Sixth Edition.
- V. Rajaraman, Fundamentals of Computers, PHI Sixth Edition.
- B. Ram, Computer Fundamentals Architecture and Organization, New Age International Publishers, Fifth Edition.
- Raja Raman V. Fundamental of Computers, Prentice Hall of India, New Delhi.
- Peter Baer Galvin, Greg Gagne, Operating System Concepts – Abraham Silberschatz, 8th edition, Wiley-India, 2009.

#### **Reference Books Recommended:**

- Chetan Shrivastava, Fundamentals of Information Technology, Kalyan Publishers.
- Dr. Santosh Kumar Miri, Computer Fundamentals and Office Automation, Iterative International Publisher IIP.
- Alexis Leon and Mathews Leon, Fundamentals of Information Technology, Vikash Publication.
- Leon and Leon, Fundamental of IT, Leon Tec world.
- Aksoy and Denardis, Introduction to Information Technology, Cengage learning.
- Suresh K. Basandra, Computers Today, Galgotia Publications.
- Dennis P. Curtin, Kim Foley, Kunai Sen and Cathleen Morin, Information Technology – The breaking wave, TMH.
- Kogent Solution Inc., OFFICE 2013 in Simple Steps, DremTech Press.
- Kogent Learning Solutions Inc., Access 2010 in Simple Steps
- Andrew S. Tanenbaum, Modern Operating Systems, 3rd Edition, PHI
- Elmasri, Carrick, Levine, Operating Systems: A Spiral Approach – TMH Edition
- Akshay Singh, Operating System, RGCSM Publications

#### **Online Resources:**

- Indian Knowledge System and computer Science from Swayam portal  
[https://onlinecourses.swayam2.ac.in/imb23\\_mg53/preview](https://onlinecourses.swayam2.ac.in/imb23_mg53/preview)
- Fundamentals of Computer :  
<https://www.w3schools.blog/computer-fundamentals-tutorial>
- Fundamentals of Computer, Memory:  
[https://www.tutorialspoint.com/computer\\_fundamentals/index.htm](https://www.tutorialspoint.com/computer_fundamentals/index.htm)
- Fundamentals of Computer , Windows Operating System :  
<https://vikaspedia.in/education/digital-literacy/it-literacy-courses-in-associating-with-msup/computer-fundamentals>
- Fundamentals of Computer:  
<https://nptel.ac.in/courses/106/103/106103068/>
- Introduction to Operating System:  
<https://www.w3schools.in/operating-system/tutorials/>
- Introduction to Operating System:  
<https://www.javatpoint.com/windows>
- Peripheral Devices  
<https://www.tutorialspoint.com/what-are-peripheral-devices>
- Windows :  
<https://www.javatpoint.com/windows>
- Linux:  
<https://www.javatpoint.com/what-is-linux>


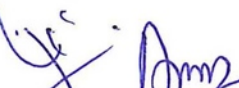




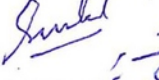
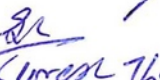
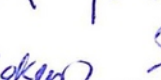
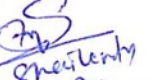
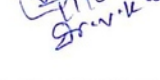
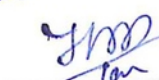





PART -D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks:		100 Marks
Continuous Internal Assessment (CIA):		30 Marks
End Semester Exam (ESE):		70 Marks
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2):	20 & 20
	Assignment / Seminar -	10
	Total Marks -	30
		Better marks out of the two Test / Quiz obtained marks in Assignment shall be considered against 30 Marks
End Semester Exam (ESE):	Two section – A & B	
	Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks	
	Section B: Descriptive answer type qts., 1 out of 2 from each unit-4x10=40 Marks	
Name and Signature of Convener & Members of CBoS:		
<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;"> <p><u>Dr. H.S. Moha</u> chairman</p> </div> <div style="text-align: center;"> <p><u>Shan.</u></p> </div> <div style="text-align: center;"> <p><u>Sunil</u></p> </div> <div style="text-align: center;"> <p><u>SC</u> (Suresh Thakur)</p> </div> <div style="text-align: center;"> <p><u>Shailendra Arora</u></p> </div> <div style="text-align: center;"> <p><u>Dr. Jitendra Kumar</u></p> </div> <div style="text-align: center;"> <p><u>Dr. Vikram</u></p> </div> <div style="text-align: center;"> <p><u>YMP</u></p> </div> <div style="text-align: center;"> <p><u>ANJEETA KUT</u></p> </div> </div>		

Dr. H.S. Moha Shan. Sunil SC Shailendra Arora Dr. Jitendra Kumar Dr. Vikram YMP ANJEETA KUT

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**COURSE CURRICULUM**

PART- A: Introduction			
Program: Bachelor in Science (CS) (Certificate / Diploma / Degree)		Semester - I	Session: 2024-2025 Session 2025-26
1	Course Code	CSSC-01P	
2	Course Title	Lab 1: Operating Systems (DOS, Windows, Linux)	
3	Course Type	Practical	
4	Prerequisite	As per program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none"><li>• Understand the fundamental concepts of DOS, Windows and Linux Operating System.</li><li>• Understand basics of DOS commands and its types.</li><li>• Understand features of Windows Operating system.</li><li>• Understand comparative features of DOS and Windows Operating systems.</li><li>• Explore functionality of Linux.</li></ul>	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field Learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
List of Practical Experiment	<ol style="list-style-type: none"><li>1. Demonstrate different Directory naming listing structure with all options.</li><li>2. Create one file and rename file using DOS command</li><li>3. Demonstrate all Internal DOS Commands with Output.</li><li>4. Demonstrate all external DOS Commands with output.</li><li>5. Introduction to Windows and Familiarity with its controls.</li><li>6. Study and use of Desktop, my computer, recycle bin, Task bar.</li><li>7. Working with Files and Folder.</li><li>8. Use of various window applications: Calculator, notepad and MS-Paint.</li><li>9. Explaining control panel options.</li><li>10. Working with printers.</li><li>11. Create a file using Linux command.</li><li>12. Write a Linux command which lists all files and directories.</li><li>13. Demonstrate use of grep command.</li><li>14. Create Directory using Linux command and create 3 different files in this directory.</li><li>15. Delete above created files and directory using Linux command.</li><li>16. Explaining various flavors of Linux.</li></ol> <p><b>Note:</b> Concerned teacher can add additional practical exercises as per requirement.</p>		30
Keywords	DOS, Windows, Linux.		
Name and Signature of Convener & Members of CBoS:			
<div><div>Dr. H.S. Hota Chairman</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div><div> Ananta Kumar</div></div>			



## PART-C: Learning Resources

### Text Books, Reference Books and Others

#### Text Books Recommended:

- Rusell A Stultz, MS DOS 6.22 BPB Publications
- Brain Underdahl, Teach yourself Windows 2000, Wiley Publications.

#### Reference Books Recommended:

- Peter Norton, Maximizing Windows, Teachmedia.
- Ray Duncan, Advances MS-DOS Programming, BPB
- Akshay Singh, Operating System, RGCSM Publications
- Ray Yao, Shell Scripting in 8 Hours

#### Online Resources:

- DOS: <https://www.javatpoint.com/ms-dos-operating-system>
- Windows: <https://www.javatpoint.com/windows>
- Linux: <https://www.javatpoint.com/what-is-linux>
- Fundamentals of Computer, Windows Operating System:  
<https://vikaspedia.in/education/digital-literacy/it-literacy-courses-in-associating-with-msup/computer-fundamentals>
- DOS: <https://www.geeksforgeeks.org/ms-dos-operating-system/>

## PART -D: Assessment and Evaluation

### Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar + Attendance - 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment A. Performed the Task based on lab. work - 20 Marks B. Spotting based on tools & technology (written) - 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	Managed by Course teacher as per lab. status

Name and Signature of Convener & Members of CBoS:

Dr. H.S. Hote  
Chairman

Sunil  
(Deputy Chairman)

Shruti  
Ang

Sanjay  
Joshi

Yash  
Kumar

Anjeeta  
Kumar

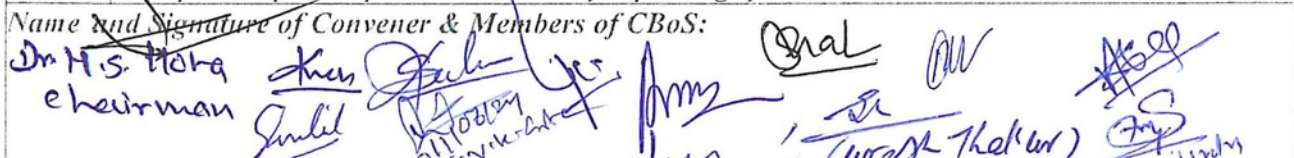
Dr. H.S. Hote



# FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

## DEPARTMENT OF COMPUTER SCIENCE

### COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Science (CS) (Certificate / Diploma / Degree/Honors)		Semester - I	Session: 2024-2025 Session 2025-26
1	Course Code	CSGE-01T	
2	Course Title	Computer Fundamental and Operating System	
3	Course Type	DGE (Discipline Generic Elective)	
4	Prerequisite	As per program	
5	Course Learning Outcomes (CLO)	After Completing this course, students will be able to: <ul style="list-style-type: none"><li>• Study and use of basic concepts and terminology of information technology.</li><li>• Organize files and documents on storage devices.</li><li>• Acquire knowledge of ICT and Internet applications.</li><li>• Develop information technology solutions by evaluating user requirements in advance trends of IT.</li><li>• Acquire knowledge of MS-Excel, MS-PowerPoint and MS-Access.</li></ul>	
6	Credit Value	3 Credits	Credit = 15 Hours - Learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching–Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	<b>Indian knowledge System and Computer Science :</b> Number System in India-Historical evidence, Salient aspect of Indian Mathematics, Bhuta-Samkhya system, Katapayadi system, pingala and the binary system, Sulbha Sutra as modern arithmetic and numerical mathematics. <b>Fundamental of Computer:</b> History of computer, Generation of computer, Types of Computers, Block diagram of CPU, Digital and Analogue computers and its evolution. Major components of digital computers, Types of digital computers, Memory addressing capability of CPU, Microprocessors, Single chip Microcomputer, Users interface, hardware, software and firmware, Number system & Computer Codes.		13
II	<b>Peripheral devices:</b> I/O Devices-KeyBoard, Mouse, Monitor, Impact and Non-Impact Printers, Plotters, Scanner, other Input/output devices I/O Port, Programmable and Non-Programmable I/O port, Inbuilt I/O ports, Parallel and Serial ports, USB, IEEE 1394, AGP, Serial data transfer scheme, Microcontroller, Signal Processor, I/O processor, Arithmetic Processor.		11
III	<b>Memory:</b> Memory hierarchy, Primary and Secondary Memory, Cache memory, Virtual Memory, Direct Access storage devices (DASD) Destructive and Non-destructive Readout, Program and data memory, Memory Management Unit (MMU).		10
IV	<b>Operating System Concepts:</b> Evolution of Operating Systems: Types of operating systems. Introduction to DOS, History Booting process of DOS, Internal and External commands of DOS, File Structure of DOS. Windows Operating System: History, Version of Windows, Basics of Windows, Windows Explorer, Windows Accessories, Control Panel. Introduction to Linux Operating System, Structure of Linux, Linux command cd, md, rm, mv, cp, ls, cat, find, grep, head, tail.		11
Keywords	Computer, Input /Output Devices, Memory, Operating System, DOS, Linux.		
Name and Signature of Convener & Members of CBoS: 			

ANJETA KUTUR

## **PART-C: Learning Resources**

### **Text Books, Reference Books and Others**

#### **Text Books Recommended:**

- P.K. Sinha, Computer Fundamentals, BPB Publication, Sixth Edition.
- V. Rajaraman, Fundamentals of Computers, PHI Sixth Edition.
- B. Ram, Computer Fundamentals Architecture and Organization, New Age International Publishers, Fifth Edition.
- Raja Raman V. Fundamental of Computers, Prentice Hall of India, New Delhi.
- Peter Baer Galvin, Greg Gagne, Operating System Concepts – Abraham Silberschatz, 8th edition, Wiley-India, 2009.

#### **Reference Books Recommended:**

- Chetan Shrivastava, Fundamentals of Information Technology, Kalyan Publishers.
- Dr. Santosh Kumar Miri, Computer Fundamentals and Office Automation, Iterative International Publisher IIP.
- Alexis Leon and Mathews Leon, Fundamentals of Information Technology, Vikash Publication.
- Leon and Leon, Fundamental of IT, Leon Tec world.
- Aksoy and Denardis, Introduction to Information Technology, Cengage learning.
- Suresh K. Basandra, Computers Today, Galgotia Publications.
- Dennis P. Curtin, Kim Foley, Kunai Sen and Cathleen Morin, Information Technology – The breaking wave, TMH.
- Kogent Solution Inc., OFFICE 2013 in Simple Steps, DremTech Press.
- Kogent Learning Solutions Inc., Access 2010 in Simple Steps
- Andrew S. Tanenbaum, Modern Operating Systems, 3rd Edition, PHI
- Elmasri, Carrick, Levine, Operating Systems: A Spiral Approach – TMH Edition
- Akshay Singh, Operating System, RGCSM Publications

#### **Online Resources:**

- Indian Knowledge System and computer Science from Swayam portal  
[https://onlinecourses.swayam2.ac.in/imb23\\_mg53/preview](https://onlinecourses.swayam2.ac.in/imb23_mg53/preview)
- Fundamentals of Computer :  
<https://www.w3schools.blog/computer-fundamentals-tutorial>
- Fundamentals of Computer, Memory:  
[https://www.tutorialspoint.com/computer\\_fundamentals/index.htm](https://www.tutorialspoint.com/computer_fundamentals/index.htm)
- Fundamentals of Computer , Windows Operating System :  
<https://vikaspedia.in/education/digital-literacy/it-literacy-courses-in-associating-with-msup/computer-fundamentals>
- Fundamentals of Computer:  
<https://nptel.ac.in/courses/106/103/106103068/>
- Introduction to Operating System:  
<https://www.w3schools.in/operating-system/tutorials/>
- Introduction to Operating System:  
<https://www.javatpoint.com/windows>.
- Peripheral Devices  
<https://www.tutorialspoint.com/what-are-peripheral-devices>
- Windows :  
<https://www.javatpoint.com/windows>
- Linux:  
<https://www.javatpoint.com/what-is-linux>





## PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 & 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz obtained marks in Assignment shall be considered against 30 Marks
End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit-4x10=40 Marks	

Name and Signature of Convener & Members of CBoS:

Dr. H.S. Hoka  
Chairman

Sunil

Dr. Suresh Thakur

Dr. Shreelata  
Agr

Dr. Anshu  
Agr

Dr. Anjeeta Kulkarni

Dr. Anshu



FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)  
DEPARTMENT OF COMPUTER SCIENCE  
COURSE CURRICULUM

## PART- A: Introduction

<b>Program: Bachelor in Science (CS)</b> <i>(Certificate / Diploma / Degree)</i>			<b>Semester - I</b>	<b>Session: 2024-2025</b> <b>Session 2025-26</b>
1	<b>Course Code</b>	<b>CSGE-01P</b>		
2	<b>Course Title</b>	<b>Lab 1: Operating System (DOS, Windows, Linux)</b>		
3	<b>Course Type</b>	<b>Practical</b>		
4	<b>Prerequisite</b>	<i>As per program</i>		
5	<b>Course Learning Outcomes (CLO)</b>	At the end of this course, the students will be able to: <ul style="list-style-type: none"> <li>• Understand the fundamental concepts of DOS, Windows and Linux Operating System.</li> <li>• Understand basics of DOS commands and its types.</li> <li>• Understand features of Windows Operating system.</li> <li>• Understand comparative features of DOS and Windows Operating systems.</li> <li>• Explore functionality of Linux.</li> </ul>		
6	<b>Credit Value</b>	<b>1 Credits</b>	<i>Credit =30 Hours Laboratory or Field Learning/Training</i>	
7	<b>Total Marks</b>	<b>Max. Marks:</b>	<b>50</b>	<b>Min Passing Marks: 20</b>

### **PART -B: Content of the Course**

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)

Module	Topics (Course contents)	No. of Period
List of Practical Experiment	<ol style="list-style-type: none"> <li>1. Demonstrate different Directory naming listing structure with all options.</li> <li>2. Create one file and rename file using DOS command</li> <li>3. Demonstrate all Internal DOS Commands with Output.</li> <li>4. Demonstrate all external DOS Commands with output.</li> <li>5. Introduction to Windows and Familiarity with its controls.</li> <li>6. Study and use of Desktop, my computer, recycle bin, Task bar.</li> <li>7. Working with Files and Folder.</li> <li>8. Use of various window applications: Calculator, notepad and MS-Paint.</li> <li>9. Explaining control panel options.</li> <li>10. Working with printers.</li> <li>11. Create a file using Linux command.</li> <li>12. Write a Linux command which lists all files and directories.</li> <li>13. Demonstrate use of grep command.</li> <li>14. Create Directory using Linux command and create 3 different files in this directory.</li> <li>15. Delete above created files and directory using Linux command.</li> <li>16. Explaining various flavors of Linux.</li> </ol>	30
<p><b>Note:</b> Concerned teacher can add additional practical exercises as per requirement.</p>		

**Keywords** *DOS, Windows, Linux.*

~~Name and Signature of Convener & Members of CBoS:~~

Dr. H. S. Hota  
Chairman  
Jambh  
Kishor Thakur  
Shailendra  
Ananta Kumar

## PART-C: Learning Resources

### Text Books, Reference Books and Others

#### Text Books Recommended:

- Rusell A Stultz, MS DOS 6.22 BPB Publications
- Brain Underdahl, Teach yourself Windows 2000, Wiley Publications.

#### Reference Books Recommended:

- Peter Norton, Maximizing Windows, Teachmedia.
- Ray Duncan, Advances MS-DOS Programming, BPB
- Akshay Singh, Operating System, RGCSM Publications
- Ray Yao, Shell Scripting in 8 Hours

#### Online Resources:

- DOS: <https://www.javatpoint.com/ms-dos-operating-system>
- Windows: <https://www.javatpoint.com/windows>
- Linux: <https://www.javatpoint.com/what-is-linux>
- Fundamentals of Computer, Windows Operating System:  
<https://vikaspedia.in/education/digital-literacy/it-literacy-courses-in-associating-with-msup/computer-fundamentals>
- DOS: <https://www.geeksforgeeks.org/ms-dos-operating-system/>

## PART -D: Assessment and Evaluation

### Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): <b>10 &amp; 10</b>	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against <b>15 Marks</b>
	Assignment/Seminar +Attendance - <b>05</b> Total Marks -	

Managed by  
Course teacher as  
per lab. status

Name and Signature of Convener & Members of CBoS:

Dr. H.S. Hota  
Chairman

Sunil,  
(Deputy Chairman)

Shailendra  
Agr

Jeetendra  
Kumar

Dr. Vikas  
Kumar

Sun

ANJEETA KUMAR

Dr. H.S. Hota



FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)  
DEPARTMENT OF COMPUTER SCIENCE  
COURSE CURRICULUM

## PART-A: Introduction

<b>Program: Bachelor in Science (CS)</b> (Certificate / Diploma / Degree/Honors)		<b>Semester – I/III/V</b>		<b>Session: 2024-2025</b>	
<b>1</b>	<b>Course Code</b>	<b>CSVAC-01</b>			<b>Session 2025-26</b>
<b>2</b>	<b>Course Title</b>	<b>Artificial Intelligence</b>			
<b>3</b>	<b>Course Type</b>	<b>Value Addition Course (VAC)</b>			
<b>4</b>	<b>Prerequisite</b>	<i>As per program</i>			
<b>5</b>	<b>Course Learning Outcomes(CLO)</b>	At the end of this course, students will be able to: <ul style="list-style-type: none"> <li>• Understand basics of AI.</li> <li>• Understand problem solving techniques of AI.</li> <li>• Aware about AI tools.</li> <li>• Explore application of AI in various domains.</li> <li>• Understand the current scenario of AI in India.</li> </ul>			
<b>6</b>	<b>Credit Value</b>	<b>2 Credits</b>	<b>Credit = 15 Hours -Learning &amp; Observation</b>		
<b>7</b>	<b>Total Marks</b>	<b>Max. Marks:</b>	<b>50</b>	<b>Min Passing Marks: 20</b>	

## PART – B: Content of the Course

**Total No. of Teaching- Learning Periods (01 Hr. per period) - 30 Periods (30 Hours)**

Unit	Topics (Course contents)	No. of Period
I	<b>Introduction:</b> Overview of Artificial Intelligence (AI), Foundations of AI, Areas and Applications of AI in various domains, AI in India, Impact and examples of AI, Future of AI.	8
II	<b>Advanced AI:</b> Basic Concept of Machine Learning, Deep Learning, Computer vision, Natural Language Processing (NLP), Speech recognition, Generative AI Applications.	8
III	<b>AI Tools:</b> Conversational AI: ALEXA, CORTANA, SIRI etc., AI tools for content generation, Image creation, Presentation, Video editing etc.	8
IV	<b>Application of AI:</b> Agriculture, Healthcare, Environment, Teaching-Learning, E-Commerce, Industry, Research etc.	6

**Keywords:** Artificial Intelligence (AI), Machine Learning (ML), Deep Learning, Computer Vision, Natural Language Processing (NLP), Conversational AI, Generative AI.

Name and Signature of Convener & Members of CBoS:

Dr H.S. Hota  
chairman

Amul

Thakur  
Shankar  
(Shankar Thakur)

Shakilur  
Arif

Chal  
A. H. 10/12/20  
Dr. 10/12/20  
J. 10/12/20  
J. 10/12/20

А. И. Лобачев

ANJEETA KUTU,

## PART-C: Learning Resources

Text Books, Reference Books and Others

*Text Books Recommended:*

- Introduction to Artificial Intelligence and Expert Systems, Dan W. Patterson, PHI Publication.
- Artificial Intelligence, Elaine Rich and Kevin Knight TMH publication.

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**Reference Books Recommended:**

- Artificial Intelligence and machine learning, Vinod Chandra S.S., Anand Hareendrn S., PHI learning private Ltd.
- Foundations of Artificial Intelligence and Expert Systems, Macmillan Series in Computer Science, V.S. Jankiraman, K. Sarukesi and P. Gopala Krishnan.

**Online Resources:**

- Ministry of Electronics and Information Technology Portal for INDIAai:  
<https://indiaai.gov.in/>
- Introduction to Artificial Intelligence from SWAYAM:  
[https://www.youtube.com/watch?v=pKcVMlkFpRc&list=PLwdnzlV3ogoXaccHrrFVZCJKBm\\_laSHcH&index=2](https://www.youtube.com/watch?v=pKcVMlkFpRc&list=PLwdnzlV3ogoXaccHrrFVZCJKBm_laSHcH&index=2)
- An introduction to Artificial Intelligence from SWAYAM:  
[https://onlinecourses.nptel.ac.in/noc24\\_cs08/preview](https://onlinecourses.nptel.ac.in/noc24_cs08/preview)
- Introduction to Artificial Intelligence from Coursera:  
<https://www.coursera.org/learn/introduction-to-ai>
- Introduction to Artificial Intelligence:  
<https://www.javatpoint.com/artificial-intelligence-ai>
- How to Learn Artificial Intelligence from Coursera:  
<https://www.coursera.org/articles/how-to-learn-artificial-intelligence>

## PART-D: Assessment and Evaluation

**Suggested Continuous Evaluation Methods:**

Maximum Marks: 50 Marks

**Continuous Internal Assessment(CIA): 15 Marks**

End Semester Exam(ESE):	35 Marks
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<b>Continuous Internal Assessment (CIA):</b> (By Course Teacher)	Internal Test / Quiz-(2): 10 + 10 Assignment/Seminar- 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against <b>15</b> Marks	
<b>End Semester Exam (ESE):</b>	Laboratory/Field Skill Performance: On spot Assessment A. Performed the task based on learned skill - 20 Marks B. Spotting based on tools (Written) - 10 Marks C. Viva-voce (based on principle/technology)- 05 Marks		Managed by Coordinator as per skilling

*Name and Signature of Convener & Members of CBoS:*

Dr. H.S. Hota  
Chairman

Kun Palu  
Junit

Sr  
(Kros Thakur)

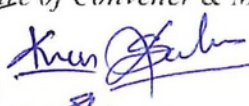
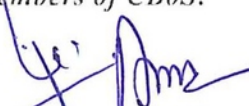
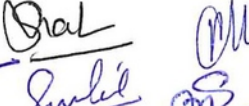


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Shankar Arji

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Anjeeta M.

Anjeeta M.

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF INFORMATION SCIENCE**  
**COURSE CURRICULUM**

PART- A: Introduction			
Program: Bachelor in Science (CS) (Certificate / Diploma / Degree/Honors)		Semester - II	Session: 2024-2025 Session 2025-26
1	Course Code	CSSC-02T	
2	Course Title	Programming in C++	
3	Course Type	DSC (Discipline Specific Course)	
4	Prerequisite	As per program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none"><li>• Understand the fundamentals of object oriented programming.</li><li>• Write programs related to concept of object oriented program</li><li>• Define functions, class and to create own Libraries.</li><li>• Write programs for file handling.</li><li>• Develop small programs to solve real world problems.</li></ul>	
6	Credit Value	3 Credits	Credit = 15 Hours - Learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching–Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	<b>Introduction and Programming Concepts :</b> Definition of Program, Source file, Object file, Executable file, Header file, Language Translator- Assembler, Interpreter, Compiler, Testing, Debugging, Linker and Loader, Algorithms, Flow Charts, History of C language, Structure of C program , C Tokens : Identifiers, Keywords, Constants, Variables, Operators, Data Types, Control structure: Conditional and looping statements, Operator Precedence and Associativity, Array and its types, Pointer, Functions : Standard Library and User defined functions, function prototype, Call by value and Call by reference, recursive functions, String functions.		12
II	<b>Introduction to Object Oriented Programming:</b> Concept of object oriented programming, Features of C++, Structure of C++ program, Data types, structure, class and objects, Access Specifiers: Private, Public, Protected, inline functions, static data and static functions. <b>Constructor:</b> Default constructor, Copy constructor, Parameterized constructor, Destructor.		11
III	<b>Inheritance and Polymorphism:</b> Definition, Concept of base and derived class, Types of Inheritance: Single, Multilevel, Multiple, Hierarchical and Hybrid Inheritance. Polymorphism: Definition, Compile time polymorphism: Function overloading, Operator overloading, constructor overloading, Runtime polymorphism: Virtual Function, pure virtual function. Inline function, friend function, friend class.		11
IV	<b>Input-Output and File Handling :</b> I/O classes, File and Stream classes, Char I/O, String I/O, Object I/O, File Pointer, Opening and Closing file. <b>Exception Handling and Standard Template Library:</b> Definition, Exception basics. try, catch and throws keywords, Template.		11
Keywords	Token, Identifier, Keyword, Array, Function, Class, Object, Polymorphism, Inheritance, Constructor, Template.		
Name and Signature of Convener & Members of CBoS:			
<div>Dr. H.S. Hota Chairman</div> <div></div> <div></div> <div></div> <div></div> <div></div>			

CS → M → Anshu Kumar

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## **PART-C: Learning Resources**

### **Text Books, Reference Books and Others**

#### **Text Books Recommended:**

- Peter Juliff, Program Design, PHI Publications.
- Yashwant Kanetkar, Let us C: BPB Publications.
- E. Balaguruswamy, Programming in ANSI C, Tata McGraw Hill

#### **Reference Books Recommended:**

- Y. Kanetkar, Let us C++, B.P.B Publication .
- E. Balaguruswamy, Programming in C++, Tata McGraw Hill.
- R. Kumar, Object Oriented Programming with C++, Prakhar Publication(Hindi)
- Dhupiya, Lakhyani , C++ Programming Alka Publications, Ajmer (Paperback, Dhupiya, Lakhyani)(Hindi)

#### **Online Resources:**

- Introduction to C and C++ from SWAYAM/NPTEL  
[https://onlinecourses.nptel.ac.in/noc22\\_cs103/preview](https://onlinecourses.nptel.ac.in/noc22_cs103/preview)  
<https://www.youtube.com/watch?v=KG4hjVDw-p8&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=2>
- Constant and Inline Function through NPTEL:  
<https://www.youtube.com/watch?v=pX6LufLso2M&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=10>
- Pointer and Reference NPTEL  
<https://www.youtube.com/watch?v=GtsBZ5e1-cE&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=12>
- Function Overloading NPTEL  
<https://www.youtube.com/watch?v=uJGmGAShHeU&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=13>
- Operator Overloading NPTEL  
<https://www.youtube.com/watch?v=0jpOwc4d-FE&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=17>
- Dynamic Memory Management NPTEL  
<https://www.youtube.com/watch?v=1kFK2X6qIc0&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=18>
- Class and Object NPTEL  
[https://www.youtube.com/watch?v=wtuks\\_f3vP4&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=24](https://www.youtube.com/watch?v=wtuks_f3vP4&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=24)
- Access Specifiers NPTEL  
[https://www.youtube.com/watch?v=6ki\\_W7cXdM0&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=22](https://www.youtube.com/watch?v=6ki_W7cXdM0&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=22)
- Constructor and Destructor NPTEL  
[https://www.youtube.com/watch?v=wtuks\\_f3vP4&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=24](https://www.youtube.com/watch?v=wtuks_f3vP4&list=PLmp4ylk-B4KrM9uOEduPIVFUkU3jNc6D2&index=24)
- C++ different topics from W3School  
<https://www.w3schools.com/Cpp/default.asp>
- C++ different topics from Javatpoint  
<https://www.javatpoint.com/cpp-tutorial>





## PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal  
Assessment (CIA):  
(By Course Teacher)

Internal Test / Quiz-(2): 20 +20  
Assignment / Seminar - 10  
Total Marks - 30

Better marks out of the two Test / Quiz +  
obtained marks in Assignment shall be  
considered against 30 Marks

End Semester Exam  
(ESE):

Two section – A & B

Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks

Section B: Descriptive answer type qts..1 out of 2 from each unit-4x10=40 Marks

Name and Signature of Convener & Members of CBoS:

Dr. H.S. Hoke  
Chairman

Kum. Gaba

IC

Amey

Chal

an

Sunil

Sc

Shresh Thakur

SP

Shree Anshu

Amey

YMP

an

Anjita

Dr. Teetadny  
Kumar

Shree Anshu

Amey

YMP

an

Anjita

ANJEETA KUMAR

32 → 12 → Anshu

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF INFORMATION SCIENCE**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>				
<b>Program:</b> Bachelor in Science (CS) (Certificate / Diploma / Degree)		<b>Semester - II</b>		<b>Session: 2024-2025</b> <b>Session 2025-26</b>
1	Course Code	CSSC-02P		
2	Course Title	Lab 2: Programming in C++		
3	Course Type	DSC		
4	Prerequisite	As per program		
5	Course Learning Outcomes (CLO)	<p>At the end of this course, the students will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the fundamental programming concepts and methodologies which are essential to create good C++ programs.</li> <li>• Code, test, and implement a well-structured, robust computer program using the C++ programming language.</li> <li>• Write reusable modules (collections of functions).</li> <li>• Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing.</li> <li>• Develop an in-depth understanding of functional, logic, and object-oriented programming paradigms.</li> </ul>		
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field Learning/Training	
7	Total Marks	Max. Marks:	50	Min Passing Marks: 20
<b>PART -B: Content of the Course</b>				
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)				
Module	Topics (Course contents)			No. of Period
<b>List of Practical Experiments.</b>	<ol style="list-style-type: none"> <li>1. Write a program in C++ for addition of two numbers using float data type.</li> <li>2. Write a program in C++ to find the biggest number between two numbers.</li> <li>3. Write a program in C++ to find the factorial value of any entered number using do – while loop.</li> <li>4. Write a program in C++ for various arithmetic operations using switch case statements.</li> <li>5. Write a program in C++ for Multiplication of two 3X3 matrices.</li> <li>6. Write a program in C++ to store five books of information using structure.</li> <li>7. Write a program in C++ to store six employee information using union.</li> <li>8. Write a program in C++ to calculate simple interest using call by value and call by reference method.</li> <li>9. Write a program in C++ to find the sum and average of five numbers using class and objects.</li> <li>10. Write a program in C++ to multiply two numbers using private and public member functions.</li> <li>11. Write a program in C++ to print structure like this using scope resolution operator 1 1 2 1 2 3 1 2 3 4 1 2 3 4 5</li> <li>12. Write a program in C++ for constructor and Destructor.</li> </ol>			30





13. Write a program in C++ for multiple inheritance.
14. Write a program in C++ for operator overloading.
15. Write a program in C++ for friend class and friend function.
16. Write a program in C++ for virtual function and virtual class.
17. Write a program in C++ for Exception Handling.
18. Write a program in C++ to open and close a file using file Handling.
19. Given two ordered arrays of integers, write a program to merge the two-arrays to get an ordered array.
20. WAP to display Fibonacci series (i) using recursion, (ii) using iteration
21. WAP to calculate Factorial of a number (i) using recursion, (ii) using iteration
22. WAP to calculate GCD of two numbers (i) with recursion (ii) without recursion.
23. Create a Matrix class using templates. Write a menu-driven program to perform following Matrix Operations (2-D array implementation): a) Sum b) Difference c) Product d) Transpose
22. Create the Person class. Create some objects of this class (by taking information from the user). Inherit the class Person to create two classes Teacher and Student class. Maintain the respective information in the classes and create, display and delete objects of these two classes (Use Runtime Polymorphism).
24. Create a class Triangle. Include overloaded functions for calculating area. Overload assignment operator and equality operator.
25. Create a class Box containing length, breadth and height. Include following methods in it: a) Calculate surface Area b) Calculate Volume c) Increment, Overload ++ operator (both prefix & postfix) d) Decrement, Overload -- operator (both prefix & postfix) e) Overload operator == (to check equality of two boxes), as a friend function f) Overload Assignment operator g) Check if it is a Cube or cuboid
26. Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
27. Write a program to retrieve the student information from the file created in the previous question and print it in the following format: Roll No. Name Marks
28. Copy the contents of one text file to another file, after removing all whitespaces.
29. Write a program for exception handling.
30. Write a program to insert data into file and to display it.

**Note:** Concerned teacher can add additional practical exercises as per requirement.

**Keywords** Array, Function, Structure, union, matrix, constructor, destructor, inheritance.

**Name and Signature of Convener & Members of CBoS:**

Dr. H.S. Hota  
Chairman

Sudhit

Shruti  
Shruti  
Shruti

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## **PART-C: Learning Resources**

Text Books, Reference Books and Others

### **Text Books Recommended:**

- Peter Juliff, Program Design, PHI Publications.
- Yashwant Kanetkar, Let us C: BPB Publications.
- E. Balaguruswamy, Programming in ANSI C, Tata McGraw Hill

### **Reference Books Recommended:**

- Y. Kanetkar, Let us C++, B.P.B Publication .
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- R. Kumar, Object Oriented Programming with C++, Prakhar Publication(Hindi)
- Dhupiya, Lakhiani , C++ Programming Alka Publications, Ajmer (Paperback, Dhupiya, Lakhiani)(Hindi)

### **Online Resources:**


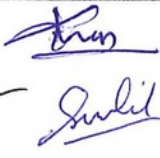



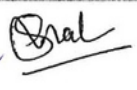
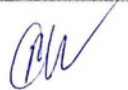

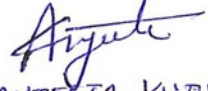
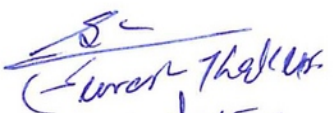
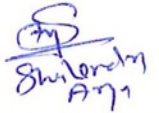

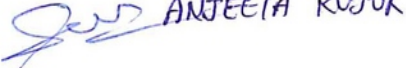
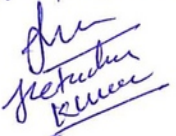
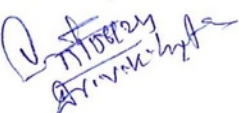


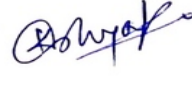
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- C++ different topics from Javatpoint  
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## **PART -D: Assessment and Evaluation**





<b>Suggested Continuous Evaluation Methods:</b>		
Maximum Marks: 50 Marks		
Continuous Internal Assessment (CIA): 15 Marks		
End Semester Exam (ESE): 35 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar + Attendance - 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment A. Performed the Task based on lab. work - 20 Marks B. Spotting based on tools & technology (written) - 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	Managed by Course teacher as per lab. status
<b>Name and Signature of Convener &amp; Members:</b>		
1. Dr. H.S. Hota 2. Dr. Swati Jain 3. Dr. Surendra Patel 4. Dr. S. K. Sahu 5. Mr. Prakash Kumar Tripathi 6. Dr. Anil Kumar Sahu 7. Mr. L.K. Gavel		

**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF INFORMATION SCIENCE**  
**COURSE CURRICULUM**

PART- A: Introduction				
Program: Bachelor in Science (CS) (Certificate / Diploma / Degree/Honors)			Semester - II	Session: 2024-2025  Session 2025-26
1	Course Code	CSGE-02T		
2	Course Title	Programming in C++		
3	Course Type	DGE (Discipline Generic Elective)		
4	Prerequisite	As per program		
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none"><li>• Understand the fundamentals of object oriented programming.</li><li>• Write programs related to concept of object oriented program</li><li>• Define functions, class and to create own Libraries.</li><li>• Write programs for file handling.</li><li>• Develop small programs to solve real world problems.</li></ul>		
6	Credit Value	3 Credits	Credit = 15 Hours - Learning & Observation	
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40	
PART -B: Content of the Course				
Total No. of Teaching–Learning Periods (01 Hr. per period) - 45 Periods (45 Hours)				
Unit	Topics (Course contents)			No. of Period
I	Introduction and Programming Concepts : Definition of Program, Source file, Object file, Executable file, Header file, Language Translator- Assembler, Interpreter, Compiler, Testing, Debugging, Linker and Loader, Algorithms, Flow Charts, History of C language, Structure of C program , C Tokens : Identifiers, Keywords, Constants, Variables, Operators, Data Types, Control structure: Conditional and looping statements, Operator Precedence and Associativity, Array and its types, Pointer, Functions : Standard Library and User defined functions, function prototype, Call by value and Call by reference, recursive functions, String functions.			12
II	Introduction to Object Oriented Programming: Concept of object oriented programming, Features of C++, Structure of C++ program, Data types, structure, class and objects, Access Specifiers: Private, Public, Protected, inline functions, static data and static functions. Constructor: Default constructor, Copy constructor, Parameterized constructor, Destructor.			11
III	Inheritance and Polymorphism: Definition, Concept of base and derived class, Types of Inheritance: Single, Multilevel, Multiple, Hierarchical and Hybrid Inheritance. Polymorphism: Definition, Compile time polymorphism: Function overloading, Operator overloading, constructor overloading, Runtime polymorphism: Virtual Function, pure virtual function. Inline function, friend function, friend class.			11
IV	Input-Output and File Handling : I/O classes, File and Stream classes, Char I/O, String I/O, Object I/O, File Pointer, Opening and Closing file. Exception Handling and Standard Template Library: Definition, Exception basics, try, catch and throws keywords, Template.			11
Keywords	Token, Identifier, Keyword, Array, Function, Class, Object, Polymorphism, Inheritance, Constructor, Template.			
Name and Signature of Convener & Members of CBoS: Dr. H. S. Heta Chairman				

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## **PART-C: Learning Resources**

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<https://www.javatpoint.com/cpp-tutorial>



**PART -D: Assessment and Evaluation****Suggested Continuous Evaluation Methods:**

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

**Continuous Internal Assessment (CIA):**  
(By Course Teacher)Internal Test / Quiz-(2): 20 +20  
Assignment / Seminar - 10  
Total Marks - 30Better marks out of the two Test / Quiz +  
obtained marks in Assignment shall be  
considered against 30 Marks**End Semester Exam (ESE):**

Two section – A &amp; B

Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks

Section B: Descriptive answer type qts., 1 out of 2 from each unit-4x10=40 Marks

**Name and Signature of Convener & Members of CBoS:**Dr H.S. Hota  
chairman

Sudil,

SC  
(Gurash Thakur)

Sudesh Kumar

Sudesh Kumar

Dr. H. S. Hota

Sud

Anjeeta Kute

Dr. H. S. Hota



**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF INFORMATION SCIENCE**  
**COURSE CURRICULUM**

<b>PART- A: Introduction</b>			
<b>Program:</b> Bachelor in Science (CS) (Certificate / Diploma / Degree)		<b>Semester - II</b>	<b>Session: 2024-2025</b> <b>Session 2025-26</b>
1	Course Code	CSGE-02P	
2	Course Title	Lab 2: Programming in C++	
3	Course Type	Practical	
4	Prerequisite	As per program	
5	Course Learning Outcomes (CLO)	<p>At the end of this course, the students will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the fundamental programming concepts and methodologies which are essential to create good C++ programs.</li> <li>• Code, test, and implement a well-structured, robust computer program using the C++ programming language.</li> <li>• Write reusable modules (collections of functions).</li> <li>• Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing.</li> <li>• Develop an in-depth understanding of functional, logic, and object-oriented programming paradigms.</li> </ul>	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field Learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
<b>PART -B: Content of the Course</b>			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
List of Practical Experiments.	<ol style="list-style-type: none"> <li>1. Write a program in C++ for addition of two numbers using float data type.</li> <li>2. Write a program in C++ to find the biggest number between two numbers.</li> <li>3. Write a program in C++ to find the factorial value of any entered number using do – while loop.</li> <li>4. Write a program in C++ for various arithmetic operations using switch case statements.</li> <li>5. Write a program in C++ for Multiplication of two 3X3 matrices.</li> <li>6. Write a program in C++ to store five books of information using structure.</li> <li>7. Write a program in C++ to store six employee information using union.</li> <li>8. Write a program in C++ to calculate simple interest using call by value and call by reference method.</li> <li>9. Write a program in C++ to find the sum and average of five numbers using class and objects.</li> <li>10. Write a program in C++ to multiply two numbers using private and public member functions.</li> <li>11. Write a program in C++ to print structure like this using scope resolution operator  1  1 2  1 2 3  1 2 3 4  1 2 3 4 5</li> <li>12. Write a program in C++ for constructor and Destructor.</li> </ol>		30



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29. Copy the contents of one text file to another file, after removing all whitespaces.
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31. Write a program to insert data into file and to display it.

**Note:** Concerned teacher can add additional practical exercises as per requirement.

**Keywords** Array, Function, Structure, union, matrix, constructor, destructor, inheritance.

**Name and Signature of Convener & Members of CBoS:**

Dr. H.S. Hota  
Chairman

*(Suraj Thakur)*

*Shreelata*

*ANJEETA KUTUR*

*Dr. H.S. Hota*



## PART-C: Learning Resources

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- Class and Object NPTEL  
[https://www.youtube.com/watch?v=wtuks\\_f3vP4&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=24](https://www.youtube.com/watch?v=wtuks_f3vP4&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=24)
- Access Specifiers NPTEL  
[https://www.youtube.com/watch?v=6ki\\_W7cXdM0&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=22](https://www.youtube.com/watch?v=6ki_W7cXdM0&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=22)
- Constructor and Destructor NPTEL  
[https://www.youtube.com/watch?v=wtuks\\_f3vP4&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=24](https://www.youtube.com/watch?v=wtuks_f3vP4&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=24)
- C++ different topics from W3School  
<https://www.w3schools.com/Cpp/default.asp>
- C++ different topics from Javatpoint  
<https://www.javatpoint.com/cpp-tutorial>



**PART -D: Assessment and Evaluation**

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar +Attendance - 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment A. Performed the Task based on lab. work - 20 Marks B. Spotting based on tools & technology (written) - 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	Managed by Course teacher as per lab. status

Name and Signature of Convener &amp; Members of CBoS:

Dr. H. Hota  
Chairman

Sundil

Kishor

Suresh Thakur

Shreeraj Arora

Sachin Kumar

Anshu Singh

Gopal

Zur

Om

Anjeeta Kujur

3 → 12 → Ashwath



**FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**COURSE CURRICULUM**

**PART- A: Introduction**

Program: Bachelor of Science (CS) (Certificate / Diploma / Degree)		Semester - II/IV/V/VI	Session: 2024-2025 <b>Session 2025-26</b>
1	Course Code	CSSEC-01	
2	Course Title	Multimedia and Animation	
3	Course Type	Skill Enhance Course (SEC)	
4	Prerequisite	As Per Program	
5	Course Learning Outcomes (CLO)	After Completing this course, students will be able to: <ul style="list-style-type: none"> <li>• Understand about Multimedia Framework.</li> <li>• Work with Adobe Flash.</li> <li>• Create games using Flash.</li> <li>• Film editing using VFX.</li> </ul>	
6	Credit Value	2 Credits (1C+1C)	Credit =15 Hours Theoretical Learning and = 30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20

**PART -B: Content of the Course**

Total No. of Teaching-learning periods:  
 Theory- 15 Periods (15 Hrs.) and Laboratory or Field learning/Training Periods: 30 Periods  
 (30 Hours)

Module	Topics (Course contents)	No. of Period
<i>Theory Content</i>	1. Introduction to multimedia, multimedia hardware, multimedia software and frameworks. 2. Introduction to flash, creating games, making presentations, animation, visualizations. 3. Introduction to VFX, VFX compositing and editing, animation, motion, modelling artist, texture artist, painting, rigging.	15
<i>Lab/Field Training Content</i>	1. Create and Edit 2D animation using Flash. 2. Create and Edit 3D animation using Flash. 3. Making presentation using Flash. 4. Creating games using Flash. 5. Audio/video Editing using VFX. 6. Film editing using VFX. 7. Color grading using VFX. 8. Motion graphics designing using VFX.	30
Keywords	Multimedia, Animation, Flash, VFX.	

Name and Signature of Convener & Members of CBoS:

Dr. H.S. Hota  
chairman

*Subodh*

*Kiran*  
*(Shreshth Thakur)*

*Shreshth Thakur*  
*ART*

*Shreshth Thakur*  
*Kumar*

*Qual*

*Dr. H.S. Hota*  
*Dr. V.K. Singh*

*Anjeeta*

ANJEETA KUTUR

*Dr. H.S. Hota*  
*Dr. V.K. Singh*

## PART-C: Learning Resources

### Text Books, Reference Books and Others

#### Text Books Recommended:

- Brian Underdahl, Macromedia Flash MX: The Complete Reference, McGraw-Hill
- Ibis Fernandez, Flash Animation and Cartooning: a creative guide
- Tony white, The animators to Adobe Flash.
- Ian failes, Masters of FX.

#### Reference Books Recommended:

- Jan Marrelli , A Guide to Web Development Using Adobe Dreamweaver CS3 with Fireworks and Flash, Lawrenceville Press
- Codex Jeffrey A. Okun and Susan Zwerman, The VES handbook of Visual Effects: Indutry Standard VFX Practices and Procedures.

#### Online Resources:

- Introduction to Multimedia:  
<https://www.javatpoint.com/multimedia-definition#:~:text=Multimedia%20combines%20several%20media%20formats,users%20engage%20with%20the%20information.>
- Introduction to Multimedia:  
[https://www.w3schools.com/html/html\\_media.asp](https://www.w3schools.com/html/html_media.asp)
- Introduction to Flash:  
<https://www.javatpoint.com/what-is-flash#:~:text=Adobe%20Flash%20is%20usually%20installed,of%20disabling%20the%20browser%20extension.>
- Introduction-To-Macromedia-Flash-8:  
<https://www.geeksforgeeks.org/introduction-to-macromedia-flash-8/>

## PART -D: Assessment and Evaluation

### Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): <b>10 &amp; 10</b>	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against <b>15 Marks</b>
	Assignment/Seminar +Attendance - <b>05</b> Total Marks - <b>15</b>	
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment	
	A. Performed the Task based on lab. work                         - <b>20 Marks</b> B. Spotting based on tools & technology (written) – <b>10 Marks</b> C. Viva-voce (based on principle/technology)     - <b>05 Marks</b>	Managed by Course teacher as per lab. status

### Name and Signature of Convener & Members of CBoS:

Dr. H.S. Hota  
Chairman

Dr. H.S. Hota

Shubil

Shresh Thakur

Shresh Thakur

Dr. H.S. Hota

ANJEETA KULUR