Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Information Technology

Choice Based Credit System (CBCS) in the light of NEP-2020

B. Tech (CSE/ IT): All Programs

SEMESTER-I (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			Marks	THEORY			PRACTICAL		L	T	P	CREDITS
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCSH107	BS	Linear Algebra	Max	60	20	20	0	0	3	1	0	4
			Min	24	16		0	0				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES:

The student will have ability to:

1. Know the fundamental principles of the Linear algebra.
2. Understand and apply the basics of the Matrices and Vector Space.

COURSE ALIGNMENT WITH UNSDG:

"The Course aims to fulfill the United Nations Sustainable Development Goals, **SDG 4 (Quality Education).**"

COURSE OUTCOMES:

After completion of the course, the student will be able to:

CO1 Apply the techniques to find the Solution of Linear equations.
CO2 Apply the basics of the calculus of the Determinants.
CO3 Apply the basics of the calculus of the Matrices.
CO4 Apply the concept of Singular value decomposition and Principal component analysis in Image Processing and Machine Learning.

TEACHING PEDAGOGY:

T1 Classroom teaching (white board), Power Point Presentations, Interactive lectures, Inquiry-based teaching
T2 ABL activities, Assignments, Flip Class/ Seminars, Quizzes, Oral Viva-voce examination

ASSESSMENT TOOLS:

ATL1 Quiz
ATL2 Activity Based Learning
ATL3 Midterm Exams
ATL4 Flip Class
ATL5 Seminar Presentation
ATL6 Assignments
ATL7 Poster

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SEMESTER-I (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
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BTCSH107	BS	Linear Algebra	Max	60	20	20	0	0	3	1	0	4
			Min	24	16		0	0				

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ATL8 Oral Viva-voce examination

ATL9 Industrial Visit Report

PREREQUISITES:

SYLLABUS:

Module	Descriptors/Topics	Hours	Assessment Tools
I	Introduction to Matrices and Determinants: Solution of Linear Equations; Cramer's rule; Inverse of a Matrix.	9	ATL1 ATL3 ATL6
II	Vectors and linear combinations: Rank of a matrix; Gaussian elimination; LU Decomposition; Solving Systems of Linear Equations using the tools of Matrices	9	ATL1 ATL3 ATL6
III	Vector space: Dimension; Basis; Orthogonally; Projections; Gram-Schmidt or thogonalization and QR decomposition	9	ATL1 ATL3 ATL6
IV	Eigenvalues and Eigenvectors; Positive definite matrices; Linear transformations; Hermit Ian and unitary matrices	9	ATL1 ATL3 ATL6
V	Singular value decomposition and Principal component analysis; Introduction to their applications in Image Processing and Machine Learning.	9	ATL1 ATL3 ATL6
	Total Hours	**45**	

ADDITIONAL RESOURCES

A. Value addition to course content/ Skill enhancement content:

1. MIT OpenCourseWare Lecture Portal (18.06): https://ocw.mit.edu/courses/18-06-linear-algebra-spring-2010/

Chairperson	Chairperson	Controller of Examination	Registrar
Board of Studies, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore	Faculty of Studies, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore	Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore	Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

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Shri Vaishnav Institute of Information Technology

Choice Based Credit System (CBCS) in the light of NEP-2020

B. Tech (CSE/ IT): All Programs

SEMESTER-I (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCSH107	BS	Linear Algebra	Max	60	20	20	0	0	3	1	0	4
			Min	24	16		0	0				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

B. Remedial classes for slow learners:

As per the SVVV SOP for slow and fast learners.

SUGGESTED READINGS:

TEXTBOOK:

1. G. Strang, *Linear Algebra and Its Applications*, 4th ed. Belmont, CA: Thomson, Brooks/Cole, 2006.

REFERENCE BOOKS:

1. E. Kreyszig, *Advanced Engineering Mathematics*, 9th ed. Hoboken, NJ, USA: Wiley, 2005.
2. R. G. Bartle and D. R. Sherbert, *Introduction to Real Analysis*, 5th ed. New York, NY, USA: Wiley, 1999.
3. J. Stewart, Calculus: *Early Transcendentals*, 5th ed. Boston, MA, USA: Thomas Learning (Brooks/Cole), 2003.

Suggested e- resources (Websites/e- books)

1. MIT OpenCourseWare: MIT 18.06 Linear Algebra, Spring 2010.
2. NPTEL: Linear Algebra.

COURSE ARTICULATION MATRIX (MAPPING OF COs WITH POs)

Course Outcomes	Correlation with POs												Correlation with PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CO1	3	3	2	-	2	-	-	-	-	-	-	2	2	2	-
CO2	3	2	1	-	-	-	-	-	-	-	-	1	1	2	-
CO3	3	3	2	2	2	-	-	-	-	-	-	2	2	2	1
CO4	3	3	3	3	3	-	-	-	-	-	-	3	2	3	1

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Choice Based Credit System (CBCS) in the light of NEP-2020

B. Tech (CSE/IT), CSE (ES, MA, AIML-IBM, DS, FSDB, AIML-M, MLCC, ICS, BDCE)

SEMESTER-II (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS202M	BEC	Object Oriented Programming with C++	Max	60	20	20	30	20	3	0	2	4
			Min	24	16		15	10				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES:

The student will have ability to:

1. To explain abstract data types, classes and different types of objects.
2. To analyze the public, protected and private modes of inheriting the classes.
3. To demonstrate the overloading of functions and operators to grant them a different meaning.
4. To provide complete knowledge of Object Oriented Programming through C++ and to enhance the programming skills of the students by giving practical assignments to be done in labs.

COURSE ALIGNMENT WITH UNSDG:

The Course aims to fulfill the United Nations Sustainable Development Goals, **SDG 4 (Quality Education)**.

COURSE OUTCOMES:

After completion of the course, the student will be able to:

CO1 Identify and describe the components of object-oriented technology and justify their relevance.

CO2 Implement inheritance for code reusability and polymorphism.

CO3 Implement object-oriented approach for real world scenarios.

CO4 Use advance features like temples and exception to make programs supporting reusability and sophistication

CO5 Develop the applications using object oriented programming with C++.

TEACHING PEDAGOGY:

T1 Classroom teaching (white board), Power Point Presentations, Interactive lectures, Inquiry-based teaching

T2 ABL activities, Assignments, Flip Class/ Seminars, Quizzes, Oral Viva-voce examination

ASSESSMENT TOOLS:

ATL1 Quiz

ATL2 Activity Based Learning

ATL3 Midterm Exams

ATL4 Flip Class

ATL5 Seminar Presentation

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B. Tech (CSE/IT), CSE (ES, MA, AIML-IBM, DS, FSDB, AIML-M, MLCC, ICS, BDCE)

SEMESTER-II (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
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			Min	24	16		15	10				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ATL6 Assignments
ATL7 Poster
ATL8 Oral Viva-voce examination
ATL9 Industrial Visit Report

PREREQUISITES:

Knowledge of Object Oriented Programming with C++ (BTCS202M)

SYLLABUS:

Module	Descriptors/Topics	Hours	Assessment Tools
I	**Concepts of OOP:** Introduction OOP, Procedural vs. Object Oriented Programming, Principles of OOP, Benefits and applications of OOP. C++ Basic Overview, Program structure, namespace, identifiers, variables, constants, enum, operators, typecasting, control structures.	9	ATL1 ATL4 ATL8
II	**C++ Functions:** The Main Function, Function prototyping, Simple functions, Call and Return by reference, Inline functions, Macro Vs. Inline functions, Overloading of functions, default arguments.	9	ATL1 ATL4 ATL8
III	**Objects and Classes:** Basics of object and class in C++, Private and public members, static data and function members, constructors and their types, destructors, operator overloading, friend function. **Inheritance:** Concept of Inheritance, types of inheritance, access modifiers, overriding, virtual base class	9	ATL1 ATL4 ATL8
IV	**Polymorphism:** Polymorphism and its types, Pointers in C++, Pointes and Objects, this pointer, virtual and pure virtual functions, Implementing polymorphism, Abstract Methods and Classes. Exception Handling, Templates function and class in C++	9	ATL1 ATL4 ATL8
V	**I/O and File management:** Concept of Streams, Cin and Cout Objects, C++ Stream Classes, Unformatted and	9	ATL1 ATL4

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SEMESTER-II (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS202M	BEC	Object Oriented Programming with C++	Max	60	20	20	30	20	3	0	2	4
			Min	24	16		15	10				

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	Formatted I/O, Manipulators, File Stream, C++ File Stream Classes, File Management Functions, File Modes, Binary and Random Files.		ATL8
	Total Hours	**45**	

ADDITIONAL RESOURCES

A. Value addition to course content/ Skill enhancement content:

https://www.youtube.com/watch?v=vLnPwxZdW4Y

B. Remedial classes for slow learners:

As per the SVVV SOP for slow and fast learners.

SUGGESTED READINGS:

TEXTBOOKS:

1. B. Stroustrup, Programming: *Principles and Practice Using C++*, 3rd ed. Boston, MA, USA: Addison-Wesley, 2024.
2. G. Ruggiero, *Software Architecture with C++: Design modern systems using effective architecture concepts, design patterns, and techniques with C++20*. Birmingham, UK: Packt Publishing, 2022.

REFERENCE BOOKS:

1. P. Deitel and H. Deitel, *C++ How to Program*, 11th ed. Boston, MA, USA: Pearson, 2024.
2. N. M. Josuttis, *C++23 - The Complete Guide*. Hamburg, Germany: Leanpub, 2026.
3. J. Galowicz, *C++20 STL Cookbook*. Birmingham, UK: Packt Publishing, 2020.
4. B. Cyganek, *Introduction to Programming with C++ for Engineers*. Hoboken, NJ, USA: Wiley-IEEE Press, 2020.

Suggested e- resources (Websites/e- books)

1. MIT OpenCourseWare Core Object-Oriented C++ Programming Guide: https://ocw.mit.edu/courses/6-096-introduction-to-c-january-iap-2011/pages/lecture-notes/

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SEMESTER-II (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS202M	BEC	Object Oriented Programming with C++	Max	60	20	20	30	20	3	0	2	4
			Min	24	16		15	10				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

LIST OF PRACTICALS

S.No.	Title	Co Mapping
1.	Write a program to display the following output using a single cout statement. Maths=90, Physics=74, Chemistry=76	CO1
2.	Write a program to read 2 numbers from the keyboard and display the larger value on the screen.	CO1
3.	Write a function using reference variables as arguments to swap the values of a pair of integers.	CO1
4.	Write a macro that obtains the largest of 3 numbers.	CO1
5.	Create two classes DM and DB which store the value of distances. DM stores distances in meters and centimeters and DB in feet and inches. Write a program that can read values for the class objects and odd one object of DM with another object of DB. Use a friend function to carry out the addition operation. The object that stores the results may be a DM object or DB object, depending on the units in which the result are required. The display should be in the format of feet and inches or meters and centimeters depending on the object on display.	CO3
6.	Define a class to represent a bank account. Include the following members: Data members 1. Name of the depositor 2. Account number 3. Type of account 4. Balance amount in the account Member functions 1. To assign initial values 2. To deposit an amount 3. To withdraw an amount after checking the balance 4. To display name and balance Write a main program to test the program.	CO3
7.	Design a constructor for bank account class.	CO3
8.	A book shop maintains the inventory of books that are being sold at the shop. The list includes details such as author, title, price, publisher and stock position. Whenever a customer wants a book, the sales person inputs the title and author and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is, then the system	CO3

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displays the book details and requests for the number of copies required. If the requested copies book details and requests for the number of copies required. If the requested copies are available, the total cost of the requested copies is displayed; otherwise the message "Required copies not in stock" is displayed.
Design a system using a class called books with suitable member functions and Constructors. Use new operator in constructors to allocate memory space required.

9. Improve the system design in exercise 8 to incorporate the following features: CO3
(a) The price of the books should be updated as and when required. Use a private member function to implement this.
(b) The stock value of each book should be automatically updated as soon as a transaction is completed.
(c) The number of successful transactions should be recorded for the purpose of statistical analysis. Use static data members to keep count of transaction.

10. Design a C++ Class 'Complex' with data members for real and imaginary part. Provide default and parameterized constructors. Write a program to perform arithmetic operations of two complex numbers using operator overloading (using either member functions or friend functions). CO2, CO3

11. Create a base class shape. Use this class to store two double type values that could be used to compute area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base a member function getdata() to initialize base class data member and another member function display_area() to compute and display the area of figures. Make display_area() as a virtual function and redefine it the derived class to suit their requirements. CO2

12. Assume that a bank maintains two kinds of accounts for customers, one called as savings account and the other as current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed. Create a class account that stores customer name, account number and type of account. From this derive the classes curacct and savacct to make them more specific to their requirements. Include necessary member functions in order to achieve the following tasks: CO2, CO5
    a. Accept deposit from a costumer and update the balance.
    b. Display the balance
    c. Compute and deposit interest.
    d. Permit withdrawal and update the balance.

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SEMESTER-II (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS202M	BEC	Object Oriented Programming with C++	Max	60	20	20	30	20	3	0	2	4
			Min	24	16		15	10				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

e. Check for the minimum balance, impose penalty, necessary and update balance.

COURSE ARTICULATION MATRIX (MAPPING OF COs WITH POs)

Course Outcomes	Correlation with POs												Correlation with PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	1	-	-	2	-	-	-	-	-	-	2	2	1	-
CO2	3	2	2	-	3	-	-	-	-	-	-	2	3	1	-
CO3	3	3	3	2	3	1	1	-	-	-	-	2	3	2	1
CO4	3	2	2	1	3	-	-	-	-	-	-	2	3	2	2
CO5	3	3	3	3	3	-	-	-	2	1	1	3	3	2	1

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SEMESTER-II (2026-30)

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			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTIT201M	DCC	Data Communication	Max	60	20	20	0	0	3	0	0	3
			Min	24	16		0	0				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES:

The student will have ability to:

1. To understand the concepts of data communications.
2. To be familiar with the Transmission media and Tools.
3. To study the functions of OSI layers.
4. To learn about IEEE standards in computer networking.
5. To get familiarized with different protocols and network components.

COURSE ALIGNMENT WITH UNSDG:

The Course aims to fulfill the United Nations Sustainable Development Goals, **SDG 4 (Quality Education)**.

COURSE OUTCOMES:

After completion of the course, the student will be able to:

CO1 Understand the Process and functions of data communications
CO2 Understand Transmission media and Tools
CO3 Understand the functions of OSI layers
CO4 Understand IEEE standards in computer networking
CO5 Understand different protocols and network components

TEACHING PEDAGOGY:

T1 Classroom teaching (white board), Power Point Presentations, Interactive lectures, Inquiry-based teaching
T2 ABL activities, Assignments, Flip Class/ Seminars, Quizzes, Oral Viva-voce examination

ASSESSMENT TOOLS:

ATL1 Quiz
ATL2 Activity Based Learning
ATL3 Midterm Exams
ATL4 Flip Class
ATL5 Seminar Presentation
ATL6 Assignments
ATL7 Poster

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SEMESTER-II (2026-30)

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			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTIT201M	DCC	Data Communication	Max	60	20	20	0	0	3	0	0	3
			Min	24	16		0	0				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

ATL8 Oral Viva-voce examination
ATL9 Industrial Visit Report

PREREQUISITES:

Basic Computer Knowledge

SYLLABUS:

Module	Descriptors/Topics	Hours	Assessment Tools
I	**Introduction:** Data Communication Components, Types of Connections, Transmission Modes, Network Devices, Topologies, Protocols and Standards, OSI Model, Transmission Media, Bandwidth, Bit Rate, Bit Length, Baseband and Broadband Transmission, Attenuation, Distortion, Noise, Throughout, Delay and Jitter.	9	ATL3 ATL8 ATL6
II	**Data Encoding:** Unipolar, Polar, Bipolar, Line and Block Codes. Multiplexing: Introduction and History, FDM, TDM, WDM, Synchronous and Statistical TDM. Synchronous and Asynchronous transmission, Serial and Parallel Transmission.	9	ATL3 ATL8 ATL6
III	**Error Detection & Correction:** Correction, Introduction–Block Coding–Hamming Distance, CRC, Flow Control and Error Control, Stop and Wait, Error Detection and Error Go Back– N ARQ, Selective Repeat ARQ, Sliding Window, Piggybacking, Random Access, CSMA/CD, CDMA/CA.	9	ATL3 ATL8 ATL6
IV	**Network Switching Techniques:** Circuit, Message, Packet and Hybrid Switching Techniques.X.25, ISDN.Logical Addressing, Ipv4, Ipv6, Address Mapping, ARP, RARP, BOOTP and DHCP, User Datagram Protocol, Transmission Control Protocol, SCTP.	9	ATL3 ATL8 ATL6
V	**Application Layer Protocols:** Domain Name Service	9	ATL3

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
			Marks	THEORY			PRACTICAL					
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTIT201M	DCC	Data Communication	Max	60	20	20	0	0	3	0	0	3
			Min	24	16		0	0				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

	Protocol, File Transfer Protocol, TELNET, WWW and Hyper Text Transfer Protocol, Simple Network Management Protocol, Simple Mail Transfer Protocol, Post Office Protocol v3.		ATL6 ATL8
	Total Hours	45	

ADDITIONAL RESOURCES

A. Value addition to course content/ Skill enhancement content:

https://www.youtube.com/playlist?list=PLUl4u3cNGP60_JNv2MmK3wkOt9syvfQWY (MIT OCW)

B. Remedial classes for slow learners:

As per the SVVV SOP for slow and fast learners.

SUGGESTED READINGS:

TEXTBOOK:

1. B. A. Forouzan, *Data Communication and Networking*, 4th ed. New Delhi, India: Tata McGraw Hill, 2011.

REFERENCE BOOKS:

1. L. L. Peterson and P. S. Davie, *Computer Networks*, 5th ed. Amsterdam, Netherlands: Elsevier, 2012.
2. W. Stallings, *Data and Computer Communication*, 8th ed. Upper Saddle River, NJ, USA: Pearson Education, 2007.
3. J. F. Kurose and K. W. Ross, *Computer Networking: A Top–Down Approach Featuring the Internet*. Upper Saddle River, NJ, USA: Pearson Education, 2005.

Suggested e- resources (Websites/e- books)

1. **MIT OpenCourseWare Data Communication and Networks Companion:**
   https://ocw.mit.edu/courses/6-263j-data-communication-networks-fall-2002/

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Information Technology

Choice Based Credit System (CBCS) in the light of NEP-2020

B. Tech (CSE/IT), CSE (ES, MA, ICS, BDCE)

SEMESTER-II (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			Marks	THEORY			PRACTICAL		L	T	P	CREDITS
				END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTIT201M	DCC	Data Communication	Max	60	20	20	0	0	3	0	0	3
			Min	24	16		0	0				

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE ARTICULATION MATRIX (MAPPING OF COs WITH POs)

Course Outcomes	Correlation with POs												Correlation with PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	1	-	-	-	-	-	-	-	-	2	2	2	1
CO2	3	2	2	2	3	-	1	-	-	-	-	2	2	1	1
CO3	3	3	2	-	2	-	-	-	-	-	-	2	3	2	2
CO4	3	2	3	-	-	1	-	1	-	-	-	2	3	1	2
CO5	3	3	3	2	3	-	-	-	-	-	-	2	3	2	3

Chairperson	Chairperson	Controller of Examination	Registrar
Board of Studies, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore	Faculty of Studies, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore	Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore	Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

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Shri Vaishnav Institute of Information Technology

Choice Based Credit System (CBCS) in the light of NEP-2020

B. Tech CSE (ES- RedHat Academy)

SEMESTER-II (2026-30)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME						L	T	P	CREDITS
				THEORY			PRACTICAL					
			Marks	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
RH134N	SEC	Red Hat Administration II	Max	0	0	0	0	150	0	0	2	1
			Min	0	0	0	0	68				

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COURSE OBJECTIVES:

The student will have ability to:

1. Enable students to automate system deployments and manage advanced file system security using SELinux and ACLs.
2. Provide expertise in managing enterprise storage solutions including LVM, partitions, and networked storage (NFS/SMB).
3. Equip students with the skills to troubleshoot the boot process and configure advanced network security through firewalls.

COURSE ALIGNMENT WITH UNSDG:

The Course aims to fulfill the United Nations Sustainable Development Goals, **SDG 4 (Quality Education)**.

COURSE OUTCOMES:

After completion of the course, the student will be able to:

CO1 Implement automated installations and advanced text processing to streamline system administration and task scheduling.

CO2 Configure and manage complex storage architectures including Logical Volume Management (LVM) and integrated network-attached storage.

CO3 Secure and troubleshoot enterprise systems by managing SELinux policies, firewalls, and the RHEL boot sequence.

TEACHING PEDAGOGY:

T1 Classroom teaching (white board), Power Point Presentations, Interactive lectures, Inquiry-based teaching

T2 ABL activities, Assignments, Flip Class/ Seminars, Quizzes, Oral Viva-voce examination

ASSESSMENT TOOLS:

ATL1 Quiz

ATL2 Activity Based Learning

ATL3 Midterm Exams

ATL4 Flip Class

ATL5 Seminar Presentation

ATL6 Assignments

ATL7 Poster

ATL8 Oral Viva-voce examination

ATL9 Industrial Visit Report

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PREREQUISITES:

RH124N

MODULE	DESCRIPTORS/TOPICS	HOURS	ASSESSMENT TOOLS
I	**Automation & Text Editing:** Automate the installation of Red Hat Enterprise Linux systems with Kick start. Use regular expressions with grip: Write regular expressions that, when partnered with grip, to isolate or locate content within text files. Create and Edit text files with vim: The vim text editors, to open, edit, and save text files. Schedule future Linux tasks: Schedule tasks to automatically execute in the future.	6	Flip Class Quiz, Assignment
II	**Security & Identity:** Manage priority of Linux processes: Influence the relative priorities at which Linux processes run. Control access to files with access control lists (ACL): Manage file security using POSIX access control lists. Manage SE Linux security: Manage the Security Enhanced Linux (SE Linux) behavior of a system to keep it secure in case of a network service compromise. Connect to network-defined users and groups: Configure systems to use central identity management services.	6	Flip Class, Oral Viva-voce, Midterm Exams
III	**Storage Management:** Add disks, partitions, and file systems to a Linux system, Manage simple partitions and file systems. Manage logical volume management (LVM) storage: Manage logical volumes from the command line.	6	Flip Class, Oral Viva-voce
IV	**Network Storage & Connectivity**: Access networked attached storage with network file system (NFS): Access (secure) NFS shares. Access networked storage with SMB: Use autofs and the command line to mount and unmounts SMB file systems.	6	Flip Class
V	**Boot Process & Troubleshooting:** Control and troubleshoot the Red Hat Enterprise Linux boot process. Limit network communication with firewall, Configure a basic firewall. Comprehensive review: Practice and demonstrate the	6	Flip Class, Oral Viva-voce

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	knowledge and skills learned in this course.		
	Total Hours	**30**	

ADDITIONAL RESOURCES

A. Value addition to course content/ Skill enhancement content:

https://www.redhat.com/en/services/training/rh134-red-hat-system-administration-ii

B. Remedial classes for slow learners:

As per the SVVV SOP for slow and fast learners.

SUGGESTED READINGS:

Reference Books

1. SA2 REDHAT SYSTEMADMINISTRATION II (Release en-3-20170803) By Wander Bosanko, Bruce Wolfe, Scott Mc Brien, George Hacker, Chen Chang.

Suggested e- resources (Websites/e- books)

1 RHA OLE Platform: RH134 Course

LIST OF PRACTICAL

S.No.	Title	Co Mapping
1.	Automate installation with Kick start	CO1
2.	Use regular expressions with grip	CO1
3.	Create and Edit text files with vim	CO1
4.	Schedule future Linux tasks	CO1
5.	Manage priority of Linux processes	CO1
6.	Control access to files with access control lists (ACL)	CO2
7.	Manage SE Linux security	CO2
8.	Connect to network-defined users and groups	CO2
9.	Add disks, partitions, and file systems to a Linux system	CO2
10.	Manage logical volume management (LVM) storage	CO2
11.	Access networked attached storage with network file system (NFS)	CO2
12.	Access networked storage with SMB	CO2
13.	Control and troubleshoot the Red Hat Enterprise Linux boot process	CO3

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CO3	3	3	3	3	3	2	-	2	2	2	1	3	2	1	3