ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2025-26

Civil Engineering

SEMESTER II

Sr. No.	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing marks	No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total		
1	BSC	**25CV201T**	Applied Chemistry	**2**	**-**	**-**	**2**	**10**	**10**	**30**	**50**	**23**	**1.5**
2	BSC	**25CV201P**	Applied Chemistry Lab	**-**	**-**	**2**	**1**	**-**	**25**	**25**	**50**	**25**	**-**
3	BSC	**25CV202T**	Statistics and Transforms	**3**	**-**	**-**	**3**	**20**	**20**	**60**	**100**	**45**	**3**
4	BSC	**25CV202P**	Statistics and Transforms Lab	**-**	**-**	**2**	**1**	**-**	**25**	**25**	**50**	**25**	**-**
5	ESC	**25CV203T**	Engineering Graphics	**2**	**-**	**-**	**2**	**10**	**10**	**30**	**50**	**23**	**1.5**
6	ESC	**25CV203P**	Engineering Graphics Lab	**-**	**-**	**2**	**1**	**-**	**25**	**25**	**50**	**25**	**-**
7	ESC	**25CV204T**	Basics of Electrical and Electronics Engineering	**2**	**-**	**-**	**2**	**10**	**10**	**30**	**50**	**23**	**1.5**
8	ESC	**25CV204P**	Basics of Electrical and Electronics Engineering Lab	**-**	**-**	**2**	**1**	**-**	**25**	**25**	**50**	**25**	**-**
9	PCC	**25CV205T**	Building Construction	**2**	**-**	**-**	**2**	**10**	**10**	**30**	**50**	**23**	**1.5**
10	AEC	**25CV206P**	Business Communication Skills – II Lab	**-**	**-**	**2**	**1**	**-**	**25**	**25**	**50**	**25**	**-**
11	IKS	**25CV107T**	Indian Knowledge Systems#	**2**	**-**	**-**	**2**	**10**	**10**	**30**	**50**	**23**	**1.5**
12	CC	**25CV208P**	Co-curricular Courses – II	**-**	**-**	**4**	**2**	**-**	**50**	**-**	**50**	**25**	**-**
Total				**13**	**-**	**14**	**20**	**70**	**245**	**335**	**650**	**-**	**-**

 # Course to be mapped with NPTEL/SWAYAM/MOOC offered course in that semester. Exam will be conducted by NPTEL/Institute

		July 2025	**NEP 3.0**	**Applicable for 2025-26**
Chairman - BoS	**Dean – Academics**	**Date of Release**	**Version**	

SEMESTER II

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CV201T	Applied Chemistry	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
1. To impart knowledge on water chemistry, electrochemical phenomena, types of fuels and lubricants 2. To enhance analytical skills in solving numerical problems related to hardness of water, calorific values of fuel. 3. To cultivate an awareness of the importance of material selection and corrosion prevention strategies.	**Students will be able to** 1. Analyze the concepts of hardness of water and apply it for industrial water treatment. 2. Evaluate the performance and advantages of Li-Ion battery, fuel cell and photochemical cell in terms of efficiency, working mechanism, and applications. 3. Compare and explain different types of corrosion & its prevention methods. 4. Determine calorific values of fuels using different calorimeters and evaluate the significance of analysis of coal 5. Measure and interpret the important properties of lubricants

Unit I Water Technology- **[10 Hrs]**

Hardness of water, Numericals on Hardness, Industrial water treatment- Boiler Troubles- Carry over, Caustic embrittlement, Boiler corrosion, Scale & Sludge formation External treatments - Softening of water by Zeolite process and De-mineralization process, Numericals on Zeolite process. Desalination of sea water- Electro dialysis and Reverse Osmosis process-Principle, methods and advantages

Unit II Electrochemical Phenomenon & Corrosion **[10 Hrs]**

Introduction- brief idea about electrochemical & galvanic series; Electrolytic & Electrochemical Cell; Construction, working & Advantages of Li Ion Battery, Fuel Cell, Photochemical Cell.
Corrosion- Introduction, Factors affecting corrosion, Types of corrosion, Corrosion prevention- Material & Design selection & Cathodic protection

Unit III Fuels & Lubricants **[10 Hrs]**

Fuels: Introduction, Calorific value, HCV & LCV. Determination of calorific value of fuels by Bomb & Boy's calorimeter. Numericals on Dulong's formula. Significance of Proximate and Ultimate analysis of Coal.
Lubricants: Introduction, Classification, Mechanisms. Properties & Significance of liquid lubricants–Viscosity and viscosity index, Flash and fire point, Cloud and pour point, Aniline point, acid value, saponification number. Numerical on Viscosity Index

Text Books

S.N	Title	Authors	Edition	Publisher
1	Text Book of Engineering Chemistry	S.S. Dara,	New	S. Chand and Company Ltd. New Delhi.
2	Textbook of Engineering Chemistry	P.C. Jain and Monica Jain	Sixth	Dhanpat Rai and Sons, New Delhi.

Reference Books

S.N	Title	Authors	Edition	Publisher
1	A Text book of Engineering Chemistry	Shashi Chawla	Ist	DhanpatRai& Sons, New Delhi
2	Applied Chemistry	N. Krishnamurthy:P. Vallinavagam. And K. Jeysubramanian	Ist	TMH

SEMESTER II

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CV201P	Applied Chemistry Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
1. To develop practical skills for analyzing water quality parameters, including hardness, alkalinity and turbidity using standard analytical techniques 2. To impart hands-on experience in testing and evaluating fuel and lubricant properties 3. To enable students to use modern analytical instruments	Students will be able to 1. Determine hardness of water samples using complexometric titration and virtual simulation experiments. 2. Evaluate key physical properties of lubricating oils 3. Perform proximate analysis of coal and interpret its industrial relevance. 4. Utilize electrochemical and conductometric methods for the quantitative estimation of chemical substances such as acids and metals.

Expt. No.	Experiments based on Performance - Any SIX
1	Determination of Hardness (Total, Permanent & Temporary) of Water Sample by Complexometric method
2	Determination of heavy metal from industrial effluent by colorimeter
3	Determination of Flash point by using Cleveland Open cup flash point apparatus / Abel's Close cup apparatus / Pensky Marten close cup apparatus
4	Determination of viscosity of lubricating oil at different temperature by Redwood Viscometer No.1 OR No. 2
5	Proximate analysis of coal -Determination of % of Moisture, Volatile Matter and Ash in coal sample
6	Determination of Neutralisation number (Acid value) of oil.
7	Determination of Cloud point & pour point from given lubricating oil
8	Determination of strength of the given acid Conductometrically
Demonstration - Any ONE	
1	Measurement of pH of sample from different sources by Digital pH Meter.
2	Determination of Consistency of grease by Penetrometer.
3	Determination of turbidity from industrial effluent.
4	Determination of calorific value of solid/ liquid fuel by using Bomb calorimeter.
Virtual Experiment - Any ONE	
1	Determination of Alkalinity of Water Sample using Warder method
2	Determination of Hardness from Tap water/ Well water/ Sea water
3	Estimation of DO content of Water sample.
Activity - Any ONE	
1	Visit of nearby industrial chemicals and safety measures.
2	Estimation of Air /Water Pollution Level at different Sites in Nagpur City.
3	Visit to Water Treatment Plant/Effluent Treatment Plant

Text Books

S.N	Title	Authors	Edition	Publisher
1	A Textbook on experiment and calculation in engineering chemistry	S.S. Dara	9th	S.Chand

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Applied Chemistry theory and practical	O.P. Virmani and A.K. Narular	Ist	New Age International
2	Laboratory Manual on Engineering Chemistry	Dr. Subdharani	Ist	Dhanpat Rai Publishing

SECOND SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CV202T	Statistics and Transforms	3	-	-	3	20	20	60	100

Course Objectives	Course Outcomes
This Course is intended to: 1. To equip students with the skills to analyze, interpret, and model statistical data using appropriate computational and analytical techniques. 2. To develop students' understanding of integral transforms and their application in solving differential equations and engineering problems.	**Students will be able to:** 1. Solve numerical integration and find analytical solutions to difference equations. 2. Apply statistical methods such as regression, correlation, and least squares fitting to analyze data. 3. Apply Laplace and inverse Laplace transforms with their properties and theorems to evaluate integrals and solve differential equations. 4. Compute Fourier series for periodic functions and apply Fourier transform to convert signals into frequency domain.

Unit I	**[9hrs]**
Finite Differences: Operator E and delta, Factorial Polynomial, Numerical integration: Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule, Difference equations with constant coefficients.	
Unit II	**[9hrs]**
Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation, Multiple regression.	
Unit III	**[7hrs]**
Laplace Transform –I : Definition, Properties, Evaluation of Integrals by Laplace Transform.	
Unit IV	**[10hrs]**
Laplace Transform –II : Inverse Laplace Transform and its properties, Convolution theorem(Statement only), Unit Step Function, Periodic function, Applications of Laplace Transform.	
Unit V	**[10hrs]**
Fourier Series and Fourier Transform: Introduction to Fourier series, Concept of even and odd function, Definition, properties, Fourier Integral Theorem, Relation with Laplace Transform, Applications of Fourier Transform.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Higher Engineering Mathematics	B. S. Grewal	38th	Khanna Publishers, New Delhi.
2	Higher Engineering Mathematics	H. K. Dass and Er. Rajnish Verma	1st	S. Chand & Co. Pvt. Ltd., New Delhi.

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Higher Engineering Mathematics	B. V. Ramana	11th reprint, 2010.	Tata McGraw-Hill Publications, New Delhi.
2	A Text Book of Engineering Mathematics	Peter O' Neil	8th	Thomson Asia Pvt. Ltd., Singapore.

SECOND SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CV202P	Statistics and Transforms Lab	--	--	2	1	25	25	50

Course Objectives	Course Outcomes
This Course is intended to: 1. To equip students with the ability to solve mathematical problems in calculus, discrete mathematics, and applied models by integrating symbolic and numerical techniques using SageMath. 2. To interpret mathematical outcomes through transforms, series, and regression-based analysis in SageMath environment.	**Students will be able to:** 1. Apply symbolic and numerical computation techniques using Sage Math to solve problems in calculus and discrete mathematics. 2. Analyze and interpret mathematical models using data fitting, correlation, and regression techniques. 3. Develop mathematical representations of functions using Laplace and Fourier transforms and apply them to solve engineering problems.

List of Experiments:-

Experiment No.	List of Experiment
1	To compute factorial polynomials for a given algebraic function with the help of SageMath.
2	To evaluate definite integrals by employing SageMath using Numerical Techniques.
3	To fit linear and quadratic models by means of the SageMath environment using least squares method.
4	To calculate the correlation coefficient and derive regression lines through the use of SageMath tools.
5	To determine Spearman's rank correlation coefficient with the help of SageMath.
6	To verify properties of Laplace Transform using SageMath.
7	To determine the Laplace and inverse Laplace transforms of various mathematical functions using SageMath.
8	To solve linear ordinary differential equations with initial conditions using the Laplace transform approach in SageMath.
9	To compute Fourier coefficients and construct the Fourier series of periodic functions using SageMath.
10	To compute the Fourier Transform and Inverse Fourier Transform of continuous-time functions using symbolic tools in SageMath.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Computational Mathematics with SageMath	Paul Zimmermann	1st	SIAM Publications Library.
2	Basics of SageMath : Mathematics(Practicals)	Varun Kumar	1st	Amazon KDP

Reference Books/Resourses

S.N	Title	Authors	Edition	Publisher
1	Mathematics-SageMath Math Software System	Indrajeet Varhadpande & Dr. Kirti Sahu	1st	Himalaya Publication
2	Applied Mathematics Using SageMath	Dr. Kirti Sahu & Dr. Sajid Anwar	1st	Himalaya Publication

SEMESTER II

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CV203T	Engineering Graphics	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
1. To expose the students to the area of Engineering Graphics. 2. To enable the student to communicate effectively through technical drawings.	Students will be able to 1. Recognize the application of drawing standards, construct engineering curves and orthographic projections of lines. 2. Construct orthographic projections of Planes and solids. 3. Apply concepts of projections and convert pictorial isometric views to orthographic views. And vice versa.

Unit I	**[9Hrs]**
Introduction to Engineering Graphics: Types of lines, standard layout, Lettering, Standard representation of dimensions. **Types of Curves** - Ellipse, Parabola, Hyperbola, Cycloid, involute and Spiral. Construction of Ellipse (Arcs of circles method), Parabola (Rectangle Method) and Hyperbola (Rectangle Method) **Introduction to Orthographic projections**- Projection of Points and Lines in the first quadrant. [Problem-solving on lines inclined to one reference plane].	
Unit II	**[9Hrs]**
Projection of Planes- Projection of planes in the first quadrant. Problem-solving on planes inclined to one reference plane. **Projection of Solids-** Projection of solids in the first quadrant. Problem-solving for the solids with an axis inclined to one reference plane.	
Unit III	**[8Hrs]**
Introduction to Orthographic drawings: Conversion of Pictorial / Isometric drawings of machine components to Orthographic drawings. I**ntroduction to Isometric drawings**: Isometric concepts of Isometric axes, Isolines, Isometric scale, Isometric projection and Isometric view. Construction of Isometric drawings and views from a given orthographic view.	

Text Books

S.N	Title	Authors	Edition	Publisher
1.	Engineering Drawing	N. D. Bhatt	-	Charotor Publishing House
2.	Engineering Drawing	D. N. Johle	-	Tata McGraw-Hill Publishing

Reference Books

S.N	Title	Authors	Edition	Publisher
1.	Fundamentals of Engineering Drawing	Luzadder Warren J, Duff John	-	PHI publications

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Chairman - BoS	Dean – Academics	Date of Release	Version	

GROUP II : SEMESTER II

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
24CV203P	Engineering Graphics Lab	-	-	2	1	-	25	25	50

Course Objectives	Course Outcomes
1. To expose the students to the area of Engineering Graphics. 2. To enable the student to communicate effectively through technical drawings.	Students will be able to 1. Apply engineering drawing standards and construct engineering curves and orthographic projections of lines. 2. Construct orthographic projections of Planes and solids. 3. Apply concepts of projections and convert pictorial views to orthographic views through pencil drawings and CAD. 4. Apply concepts of projections and construct isometric views through pencil drawings and CAD CAD.

A minimum of eight experiments to be performed

Expt. No.	Title of the experiment
1	Pencil drawings on Engineering Curves
2	Pencil drawings on Projection of Lines
3	Pencil drawings on Projection of Planes
4	Pencil drawings on Projection of Solids
5	Pencil drawings on Orthographic projections
6	Pencil drawings 0n Isometric Views / Projection
7	Computer-Aided Drawing on Orthographic Views
8	Computer-Aided Drawing on Isometric Views

Text Books

S.N	Title	Authors	Edition	Publisher
1.	Engineering Drawing	N. D. Bhatt	-	Charotor Publishing House
2.	Engineering Drawing	D. N. Johle	-	Tata McGraw-Hill Publishing

Reference Books

S.N	Title	Authors	Edition	Publisher
1.	Fundamentals of Engineering Drawing	Luzadder Warren J, Duff John		PHI publications

GROUP II : SEMESTER II

Course Code	Course Name	Th	Tu	Pr	Credits		Evaluation		
						MSE	CA	ESE	Total
25CV204T	Basics of Electrical and Electronics Engineering	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
The goal of this course is to introduce advanced concepts of 1. To understand the fundamentals of Electrical & Electronics engineering. 2. To summarize and apply the basic concepts of Electrical & Electronics engineering.	**Students will be able to** 1. **Solve** DC circuits using Ohm's Law, and Kirchhoff's Laws, and **analyze** series and parallel connections for current, voltage, and resistance. 2. **Analyze** R-L-C circuits under A.C. excitation and **evaluate** resonance conditions in series R-L-C circuits. 3. **Explain** the characteristics and applications of P-N junction diodes, transistors, and other electronic devices, 4. **Design** simple digital circuits using Boolean algebra and logic
Unit I	**[9Hrs]**
DC Electric Circuit: Introduction to Voltage, Current, Resistor, Power and Energy, Ohm's Law, Series, and Parallel Connections with Numerical, Types of Electrical Energy Sources: Ideal and Practical Independent Sources, and Kirchhoff's Laws with Numerical.	
Unit II	**[9Hrs]**
AC Electric Circuit: Generation of Single Phase A.C. Power, A.C. Fundamentals, Steady-state behavior of R-L-C circuit with excitation and Numerical, Resonance in Series R-L-C circuit and Numerical.	
Unit III	**[8Hrs]**
Introduction to Electronic Devices: Types of Semiconductors, P-N Junction, V-I Characteristics of P-N junction diode, Applications: LED, photodiode, Zener diode, Bipolar Junction Transistor: types, configuration and applications, phototransistor, solar cell. **Digital Electronics:** Number system- binary, decimal, hexadecimal, Logic gates, Boolean Algebra.	

Text Books:

S. No.	Title	Authors	Edition	Publisher
1	Basic and Advance Electrical Engineering	Gaurav Gadge	-----	Electro-Tech Publication, Satara
2	A Text Book of Electrical Technology	B. L. Theraja and A. K. Theraja	(Volume I, II & III)	S. Chand and Company
3	Modern Digital Electronics	R. P. Jain	4th Edition	Mc-Graw Hill Education,

Reference Books:

S. No.	Title	Authors	Edition	Publisher
1	Electronic Devices and Circuits	N. Suresh Kumar	4th Edition	Mc-Graw Hill Education Pvt. Ltd. New Delhi
2	Integrated Electronics	J. Millman, C. Halkias	4th Edition	Mc-Graw Hill Education
3	Fundamentals of Digital Circuits	A. Anand Kumar	-----	PHI Learning Pvt. Ltd.

SECOND SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits		Evaluation		
						MSE	CA	ESE	Total
25CV204P	Basics of Electrical and Electronics Engineering Lab	-	-	2	1	-	25	25	50

Course Objectives	Course Outcomes
The goal of this course is to introduce advanced concepts of 1. To understand the fundamentals of Electrical & Electronics engineering. 2. To summarize and apply the basic concepts of Electrical & Electronics engineering.	Students will be able to 1. **Solve** DC circuits using Ohm's Law, and Kirchhoff's Laws, and **analyze** series and parallel connections for current, voltage, and resistance. 2. **Analyze** R-L-C circuits under A.C. excitation and **evaluate** resonance conditions in series R-L-C circuits. 3. **Explain** the characteristics and applications of P-N junction diodes, transistors, and other electronic devices, **design** simple digital circuits using Boolean algebra and logic gates, and **convert** numbers between binary, decimal, and hexadecimal systems.

Expt. No.	Title of the experiment
1	To verify the effective resistance of a series-parallel resistance circuit.
2	To verify Kirchoff's Current Law for a D.C. Circuit.
3	To verify Kirchoff's Voltage Law for a D.C. Circuit.
4	Calculate Ohmic Parameters (R, X_L, X_C, and Z) of series A.C. Circuit.
5	Measurement of Power and calculation of Power Factor of series A.C. Circuit.
6	To verify resonant condition in the series R-L-C circuit.
7	To study Light Emitting Diode (LED) circuit with LDR.
8	To study and verify the Truth Table of Basic Gates.
9	To study and verify the Truth Table of NAND and NOR as Universal Gates.

Text Books

S. N	Title	Authors	Edition	Publisher
1	Basic Electrical Engineering	V. K. Mehta	II	S. Chand
2	Getting started with MATLAB	Rudra Pratap	III	Oxford

Reference Books

S. N	Title	Authors	Edition	Publisher
1	Electrical Technology	B. L. Theraja	II	S. Chand

SECOND SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CV205T	Building Construction	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
1. To develop a fundamental understanding of various building construction methods, materials, and techniques. 2. To familiarize students with structural elements of buildings from foundation to roof. 3. To inculcate knowledge of construction practices, safety, and sustainability in building construction. 4. To analyze and understand construction sequences and details necessary for practical application.	1. Students will identify building components, materials, and foundation types suitable for various soil conditions and construction practices. 2. Students will apply masonry techniques, wall construction methods, flooring systems, and moisture control measures in building projects. 3. Students will design and execute roofing systems, temporary works, doors/windows installation, and sustainable finishing techniques while ensuring safety.

Unit I: Introduction to Building Components and Foundations	**[10 Hrs]**
Overview of building construction and types of structures, Functions and importance of building components: substructure and superstructure. Types of foundations: shallow and deep foundations, footings. Site clearance and layout for construction, Damp proof course (DPC) and plinth construction, Basic soil engineering concepts related to foundation.	
Unit II: Masonry, Walls, and Flooring	**[10 Hrs]**
Types and methods of masonry: stone, brick, block masonry, Masonry bonds and reinforced brickwork, Construction practices for walls: load-bearing, partition, cavity walls, Flooring types and construction techniques, Damp-proofing and moisture control methods, Construction joints and expansion joints in masonry.	
Unit III: Roofing, Doors, Windows, and Finishing	**[10 Hrs]**
Types of roofs and roof framing construction, Temporary works: centering, shuttering, scaffolding, Doors and windows: types, materials, installation techniques, Plastering, painting, and finishing works, Introduction to sustainable construction and energy-efficient buildings, Safety and quality considerations in building construction.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Building Construction	Sushil Kumar	20th (Reprint 2023)	Standard Publications
2	Building Construction	Rangwala	34th (2022)	Charotar Publishing House

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Fundamentals of Building Construction: Materials and Methods	Edward Allen & Joseph Iano	7th	Wiley

SECOND SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
25CV206P	Business Communication Skills - II Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
To empower students to develop a career oriented mindset while harnessing the power of LSRW skills.	**Students would be able to:** 1. Participate in Group Discussions. 2. Improve their reading and formal writing skills. 3. Develop upon their listening skills to engage in meaningful conversations. 4. Develop oratory skills to engage and inform audiences. 5. Prepare themselves for participating in business meetings.

Expt. No.	Title of the experiment
1	Group Discussion
2	Reading for Competitive Exams II
3	Listening Skills II
4	Presenting a TED Talk
5	Media Interaction
6	Business Correspondence II
7	Report Writing
8	Mock Meeting

Reference Books

S. N	Title	Authors	Edition	Publisher
1.	Communication Skills for Engineers	C. Muralikrishna & SunitaMIshra	2nd Edition, 2011	Pearson India Education Services
2.	Communication Skills	Dr. L .Bisen, Dr. B. Agrawal& Dr. N. T. Kalyani	1st Edition, 2021	Himalaya Publishing House
3.	Barron's IELTS Superpack	Lin Lougheed	2012	Barrons Educational Series

SECOND SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation			
						MSE	CA	ESE	Total
25CV107T	Indian Knowledge Systems	2	-	-	2	10	10	30	50

Course Objectives	Course Outcomes
This course is intended to 1. To understand the distinctive features of Indian Knowledge Traditions. 2. To explore India's contributions in science, mathematics, astronomy, technology, and architecture. 3. To connect IKS concepts with modern applications and sustainable practices.	**Students will be able to** 1.Comprehend the foundations of Indian Knowledge System and its difference from Western approaches. 2.Analyze India's contributions in mathematics, astronomy, and technology. 3.Appreciate the relevance of art, architecture, and traditional sciences in modern contexts.

Unit I FOUNDATIONS OF IKS	**[8Hrs]**
Introduction to the Indian Knowledge System with its distinctive features in contrast to Western thought, the Vedic corpus including the Vedas, Upaniṣads, and associated philosophical traditions, knowledge traditions of Śikṣā dealing with phonetics, Vyākaraṇa focusing on grammar, Nirukta exploring etymology, Chandas emphasizing prosody, Kalpa codifying rituals and social duties, Jyotiṣa concerning astronomy and timekeeping, and reflective Discover IKS activities based on case studies and experiential learning.	
Unit II SCIENTIFIC AND TECHNOLOGICAL CONTRIBUTIONS	**[8Hrs]**
Mathematics including the number system, importance of zero, contributions of Brahmagupta, developments in geometry and algebra, ancient Indian astronomy and its observations, contributions of Parāśara and Garga, connections between astronomical knowledge and Vedic rituals, engineering and technology in ancient India covering metallurgy and advanced metalworking, healthcare practices and their scientific basis, construction of granite structures and architectural precision, Harappan technology and innovations in urban planning, maritime traditions and shipbuilding heritage, case studies on the works of Indian mathematicians, the astronomical observatory of Jantar Mantar, and the corrosion-resistant Iron Pillar of Delhi.	
Unit III Art, Architecture & Sustainable Knowledge	**[8Hrs]**
Town planning traditions from the Harappan civilization to classical India, rock-cut architecture including the Ellora caves, Kailasanātha temple, and Buddhist cave traditions, principles of temple design and Vastu Shastra, indigenous engineering in art and architecture blending aesthetics, science, and spirituality, relevance of IKS in contemporary contexts through sustainability, holistic living, and eco-conscious design.	

Text Books

Sr.	Title	Authors	Edition	Publisher
1	Indian Knowledge System	Kapil Kapoor & Michel Danino(Eds.)	1st	PHI Learning
2	Foundations of Indian Culture and Knowledge System	B. L. Atreya	Reprint	Bharatiya Vidya Bhavan
3	Essays on Indian Knowledge Systems	Michael Danino	1st	AICTE – IKS Division

Reference Books

Sr. No.	Title	Authors	Edition	Publisher
1	Indian Knowledge Systems: Nature, Philosophy and Manifestation	Bal Ram Singh, Pushpesh Pant	1st	Pratibha Prakashan
2	The Science and Technology in Ancient India	Debiprasad Chattopadhyaya	Reprint	People's Publishing House

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Chairman -BoS	Dean-Academics	Date of Release	Version	