

ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR (An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University) B. Tech. Scheme of Examination & Syllabus 2023-24

**ENGINEERING, SCIENCES & HUMANITIES** 

# **GROUP 1: SEMESTER I**

Sr	Course	course Course Title Week Crec		Credits		Maximum M	arks			
No	Category	Code	Course Title	L	т	Р		Continual Assessment	End Sem Examination	Total
1	BSC	ES101T	Engineering Physics & Materials Science	2	0	-	2	15	35	50
2	BSC	ES101P	Engineering Physics & Materials Science Lab	-	-	2	1	25	25	50
3	BSC	ES102T	Applied Mathematics-I	3	1	-	4	30	70	100
4	ESC	ES103T	Engineering Practices-I (Electrical & Electronics)	3	-	-	3	30	70	100
5	ESC	ES103P	Engineering Practices-I Lab (Electrical & Electronics)	-	-	2	1	25	25	50
6	ESC	ES104T	Logic Building with C	2	-	-	2	15	35	50
7	ESC	ES104P	Logic Building with C Lab	-	-	2	1	25	25	50
8	AEC	ES105P	Business Communication Skills-I Lab	-	-	2	1	25	25	50
9	IKS	ES106T	Indian Knowledge Systems	2	-	-	2	15	35	50
10	SEC	ES107P	Career Development-I	-	-	2	1	50	-	50
11	PCC	xx101T	Program Foundation-I	2	-	-	2	15	35	50
12	СС	ES108T	Co-curricular Course-I	2	-	-	2	50	-	50
		т	otal	16	1	10	22	320	380	700

Dockede	wohpande	July 2023	1.0	Applicable for 2023-24
Chairman - BoS	Dean – Academics	Date of Release	Version	



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**ENGINEERING, SCIENCES & HUMANITIES** 

# **GROUP 1: SEMESTER II**

				Hours per		Crodite		Maximum Ma	rke	
Sr	Course	Course	Course Title	N N	per Neel	c	Creuits			183
No	Category	Code		L	т	Ρ		Continual Assessment	End Sem Examination	Total
1	BSC	ES201T	Engineering Chemistry & Environmental Science	2	-	-	2	15	35	50
2	BSC	ES201P	Engineering Chemistry & Environmental Science Lab	-	-	2	1	25	25	50
3	BSC	ES202T	Applied Mathematics-II	3	1	-	4	30	70	100
4	ESC	ES203T	Engineering Practices-II (Civil & Mechanical)	3	-	-	3	30	70	100
5	ESC	ES203P	Engineering Practices-II Lab (Civil & Mechanical)	-	-	2	1	25	25	50
6	ESC	ES204T	Problem Solving with Python	2	-	•	2	15	35	50
7	ESC	ES204P	Problem Solving with Python Lab	-	-	2	1	25	25	50
8	AEC	ES205P	Business Communication Skills II Lab	-	-	2	1	25	25	50
9	ESC	ES206T	Design Thinking	2	-		2	15	35	50
10	SEC	ES207P	Career Development II	-	-	2	1	50	-	50
11	PCC	xx201T	Program Foundation II	2	-	-	2	15	35	50
12	СС	ES208T	Co-curricular Course - II	2	-	-	2	50		50
13	ELC	ES209P	Tinkering & model Lab	-	-	2	-	-	-	-
			Total	16	1	12	22	320	380	700

Watchede	wohpande	July 2023	1.0	Applicable for 2023-24
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**B. Tech. Scheme of Examination & Syllabus 2023-24 ENGINEERING, SCIENCES & HUMANITIES** 

# FIRST SEMESTER (GROUP-I) / SECOND SEMESTER (GROUP-II)

Course Code	Course Name	Th	Tu	Pr	Credits		Evaluation	
E\$101T	Engineering Physics & Materials	2			2	CA	ESE	Total
LSIUIT	Science	2			2	15	35	50
					-			
<u> </u>	Course Objectives				Cou	rse Outcome	es	
<ul> <li>To undersi application</li> <li>To develop</li> </ul>	tand the basic laws of physics and th in engineering and technology. scientific temper and analytical capability.	eir •	Dis anc Exp Ma Exp Inte	tinguis l acqui blain th terials. blain th erpret th	h the types of re a brief ide e properties e structure of he concepts	of solids on the a about sem and applicat of Crystals. of Quantum	ne basis of co iconductors. ions of Magne Mechanics.	nductivity
Unit I BASICS OF	SOLID STATE PHYSICS - I							[07 Hrs]
Free electron The Semiconductor; S	eory (qualitative idea) and its features; Idea o Semiconductors, Intrinsic and Extrinsic Semic	f band conduct	formati ors and	on in s d appli	olids,Classi cations.	fication of sol	ids: Metal, Ins	sulator,
Unit II BASICS O	F SOLID STATE PHYSICS - II							[06 Hrs]
Magnetic Mater Paramagnetic an	ials: Terms and definitions, Types of ma d Ferromagnetic Materials.	ignetic	materi	als, cł	naracteristic	s and applic	ations of Dia	amagnetic,
Unit III CRYSTAL	STRUCTURE							[06 Hrs]
Space lattice, Cr - Braggs' Law ar	ystal structure, Unit cell, Types of unit cell, Br nd its applications.	avais la	attice, N	/liller Ir	dices, Inter	-planer distar	nce, Diffraction	n of X-rays
Unit IV QUANTU	M MECHANICS							[07 Hrs]
Dual nature, de-	Broglie hypothesis, Uncertainty principle - phy ave packet, phase and group velocity. Schro	/sical si dinger's	ignifica s time c	nce an lepend	d its applica ent and time	tion, Wave fu e independen	Inction - proba	ability and dits

S.N	Title	Authors	Edition	Publisher
1	Fundamentals of Physics	David Halliday, Robert Resnick and Jerle Walker	8e extended	John-Wiley India
2	Electronic Engineering Materials and Devices	John Allision	edition 10th reprint	ТМН
3	Engineering Physics	M. N. Avadhanulu	Latest edition	S. Chand & Co.

#### **Reference Books**

S.N	Title	Authors	Edition	Publisher
1	Solid State Physics	Charles Kittel	Eighth edition	John Wiley & Sons, Inc
2	Solid State Physics	R.L. Singhal	Eighth edition	Kedarnath Ramnath
3	Quantum Mechanics	Schiff	First Edition	McGraw-Hill Book Company, Inc.



1 March 2023 Applicable for Date of Release Version

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ENGINEERING, SCIENCES & HUMANITIES

## FIRST SEMESTER (GROUP-I) / SECOND SEMESTER (GROUP-II)

Course Code	Course Name	Th	Tu	Pr	Credits		Evaluation	
ES101P	Engineering Physics & Materials Science Lab.			2	1	CA	ESE	Total
LOIVIE				2		25	25	50
	Course Objectives				Course	Outcomes		
<ul> <li>This course is int</li> <li>To underst application i</li> <li>To develop</li> </ul>	ended and the basic laws of physics and their n engineering and technology. scientific temper and analytical capability.	<ul> <li>Students will be able to</li> <li>Verify principles/laws by selecting and using proper measuring instruments, interpret result and draw conclusions</li> <li>Find various parameters using various properties of light.</li> <li>Apply the concepts of Semiconductors and Magnetic Materials</li> </ul>						

Expt. No.	Title of the experiment
1	Study of semiconductor diodes
2	Study of Phenomenon of Diffraction
3	Study of Interference
4	Study of Birefringence
5	Guoy's Balance Method a) Determination of Magnetic Susceptibility of different magnetic materials. b) Identification of different types of Magnetic Materials
6	Study of Planck's Constant by means of LED
7	Determination of Curie Temperature of Ferromagnetic Material.
8	Determination of phase difference and frequency of ac voltage using CRO.
9	Study of Transistors.
10	Study of Hall Effect.
11	Experiment on 'Quantum Eraser'.
12	Demonstration of phenomena of Optics using Laser.

# **Text Books**

S.N	Title	Authors	Edition	Publisher
1	Fundamentals of Physics	David Halliday, Robert Resnick and Jerle Walker	8e extended	John-Wiley India
2	A Textbook of Engineering Physics	Dr. M. N. Avdhanulu, Dr. P. G. Kshirsagar	Latest edition	S. Chand Publication.
3	Principles of Physics	David Halliday, Robert Resnick, Jearl Walker	10th Edition	John Wiley and Sons (2017)

S.N	Title	Authors	Edition	Publisher
1	Solid State Physics	Charles Kittel	Eighth edition	John Wiley & Sons, Inc
2	Solid State Physics	R.L. Singhal	Eighth edition	Kedarnath Ramnath
3	University Physics	Young and Freedman	Fifteenth edition	Pearson Education

Dochede	wohpande	March 2023	1	Applicable for 2023-24
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B. Tech. Scheme of Examination & Syllabus 2023-24

**ENGINEERING, SCIENCE AND HUMANITIES** 

# FIRST SEMESTER

ES102T         Applied Mathematics-I         3         1         0         4         CA 50         Foc 100           Course Objectives         Solve the system of linear equations using matrices.         100         100           The goal of this paper is to introduce advanced concepts of 3) Matrix Algebra         Solve the system of linear equations using matrices.         1010           Solve first order and first degree differential equations by various methods and apply these techniques to solve problems in engineering.         50/the first order and first degree differential equations by various methods and apply these techniques to solve problems in engineering.           Unit I         Solve first order and first degree differential equations.         Total           Whatrix Algebra : Introduction to matrices, regressions, Rank correlation.         [7Hrs]           Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.         [6Hrs]           If the order DifferentialEquations: First order and first degree differential equations.         [8Hrs]           Higher OrderDifferentialEquations: Sirst order and first degree differential equations.         [8Hrs]           Higher CorderDifferentialEquations: Userete & Continuous random Variable. Distribution function, Mathematical expectations, Variance and Standard deviation.         [8Hrs]           1         Higher Engineering Mathematics         B. S. Grewal <t< th=""><th>Course</th><th colspan="2">urse Code Course Name</th><th>ame</th><th>Th</th><th>Tu</th><th>Pr</th><th>Credits</th><th></th><th>Evaluation</th><th></th></t<>	Course	urse Code Course Name		ame	Th	Tu	Pr	Credits		Evaluation	
Course         Dipute Mathematics         J         I         G         4         30         70         100           Course Objectives         Course Outcomes         Solve the system of linear equations using matrices.         Identify, analyse and solve statistical problems.         Solve first order and first degree differential equations by various methods and apply these techniques to solve problems in engineering fields.           2) Differential Equations         3) Matrix Algebra         Solve higher order differential equations by various methods and apply these techniques to solve problems in engineering.         Describe the importance of probability theory in the field of engineering and prepare student to use it for analysis of data.         [7Hrs]           Matrix Algebra : Introduction to matrices, Rank of a matrix, Consistency of system of linear equations, Linear and orthogonal transformations, Cayley- Hamilton Theorem.         [7Hrs]           Unit II         [7Hrs]         [7Hrs]           Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines equations (excluding the cases of Integrating Factor), Applications of differential equations.         [8Hrs]           First Order Differential Equations: First order and first degree differential equations.         [8Hrs]           Higher OrderDifferential Equations: Higher order differential equations.         [8Hrs]           Higher OrderDifferential Equations.         [8Hrs]           Higher Engineering Mathematic	ES1	02Т	Applied Mathe	matics_l	2	1	0	4	CA	ESE	Total
Course Objectives         Course Outcomes           • The goal of this paper is to introduce advanced concepts of         • Solve the system of linear equations using matrices. • Identify, analyse and solve statistica problems. • Solve first order and first degree differential equations by various methods and apply these techniques to solve problems in engineering fields. • Solve higher order differential equations by various methods and apply these techniques to solve problems in engineering. • Describe the importance of probability theory in the field of engineering. • Describe the importance of probability theory in the field of engineering and prepare student to use it for analysis of data. • Introduction to matrices, Rank of a matrix, Consistency of system of linear equations, Linear and orthogonal transformations, Cayley- Hamilton Theorem. • Unit II         [7Hrs]           Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.         [6Hrs]           Unit II         [6Hrs]         [6Hrs]           First Order DifferentialEquations: First order and first degree differential equations.         [6Hrs]           Ightph TorderDifferentialEquations: Higher order differential equations.         [6Hrs]           Imit IV         [6Hrs]           Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.         [7Hrs]           2         A Text Book of Applied Mathematics         B. S. Grewal         Khanan Aubibishers, New Delhi.	231	021	Applied Matlie	inatics-i	5	-	U	-	30	70	100
Course Objectives         Course Outcomes           • The goal of this paper is to introduce advanced concepts of         Solve the system of linear equations using matrices. Solve first order and first degree differential equations by various methods and apply these techniques to solve problems in engineering fields. Solve the importance of probability theory in the field of engineering and prepare student to use it for analysis of data.           Unit I         Image:				1							
The goal of this paper is to introduce     advanced concepts of     advanced concepts of     advanced Engineering Mathematics     Erwin Kreyszig		Cours	e Objectives			<u>,</u>	Cou	rse Outcor	nes		
advanced Concepts of matrix and the statistical processing and procesing and procesing and processing and processing and proc	• The g	goal of th	his paper is to introduce	<ul> <li>Solve the sy</li> <li>Identify and</li> </ul>	stem o	f linear	equati	ons using n	natrices.		
1) Probability & statistics       apply these techniques to solve problems in engineering fields.         2) Differential Equations       Solve higher order differential equations by various methods and apply these techniques to solve problems in engineering.         3) Matrix Algebra       Describe the importance of probability theory in the field of engineering and prepare student to use it for analysis of data.         Unit I       [7Hrs]         Matrix Algebra : Introduction to matrices, , Rank of a matrix, Consistency of system of linear equations, Linear and orthogonal transformations, Cayley- Hamilton Theorem.       [7Hrs]         Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.       [6Hrs]         First Order DifferentialEquations: First order and first degree differential equations: Linear, Reducible to linear & Exact differential equations (excluding the cases of integrating Factor), Applications of differential equations.       [7Hrs]         Higher OrderDifferentialEquations: Higher order differential equations.       [7Hrs]         Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, New Delhi.       [7Hrs]         1       Higher Engineering Mathematics       B. S. Grewal       Khanna Publisher, New Delhi.         2       A Text Book of Applied Mathematics       B. V. Ramana, 11th reprint, 2010.       Tata McGraw Hill New Delhi.       Singapore.         3	auvar	ncea conc	septs of	<ul> <li>Solve first o</li> </ul>	iyse an irder ar	nd first	deare	e differentia	al equations b	v various me	thods and
<ul> <li>2) Differential Equations</li> <li>3) Matrix Algebra</li> <li>Solve higher order differential equations by various methods and apply these techniques to solve problems in engineering.</li> <li>Describe the importance of probability theory in the field of engineering and prepare student to use it for analysis of data.</li> <li>Unit I</li> <li>Imatrix Algebra : Introduction to matrices, Rank of a matrix, Consistency of system of linear equations, Linear and orthogonal transformations, Cayley- Hamilton Theorem.</li> <li>Imit I</li> <li>Imit I</li></ul>	1) [	1) Probability & statistics apply these techniques to solve problems in engineering fields.									
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Describe the Importance of processing leaving and prepare student to use it for analysis of data.         [7Hrs]           Matrix Algebra : Introduction to matrices, , Rank of a matrix, Consistency of system of linear equations, Linear and orthogonal transformations, Cayley- Hamilton Theorem.         [7Hrs]           Matrix Algebra : Introduction to matrices, , Rank of a matrix, Consistency of system of linear equations, Linear and orthogonal transformations, Cayley- Hamilton Theorem.         [7Hrs]           Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.         [7Hrs]           Unit II         [7Hrs]         [6Hrs]           First OrderDifferentialEquations: First order and first degree differential equations: Linear, Reducible to linear & Exact differential equations (excluding the cases of Integrating Factor), Applications of differential equations.         [8Hrs]           Higher OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.         [7Hrs]           Init V         Ret Standard deviation.         [7Hrs]           Init V         [7Hrs]         [7Hrs]           A Text Book of Applied Mathematics         B. S. Grewal         New Delhi.           2         A Text Book of Applied Mathematics         B. V. Ramana,         11th reprint, 2010.         Tata McGraw Hill New Delhi.	3) I	Matrix Alg	ebra	techniques t	o solve	proble	ems in of	engineering	Any in the fire	old of ongine	ooring and
Unit I       [7Hrs]         Matrix Algebra : Introduction to matrices, , Rank of a matrix, Consistency of system of linear equations, Linear and orthogonal transformations, Cayley- Hamilton Theorem.       [7Hrs]         Unit II       [7Hrs]         Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.       [7Hrs]         Unit III       [6Hrs]         First OrderDifferentialEquations: First order and first degree differential equations: Linear, Reducible to linear & Exact differential equations (excluding the cases of Integrating Factor), Applications of differential equations.       [6Hrs]         Unit IV       [8Hrs]         Higher OrderDifferentialEquations: Higher order differential equations.       [7Hrs]         Variance and Standard deviation:       [7Hrs]         Variance and Standard deviation.       [7Hrs]         Text Books       [7Hrs]         A Text Book of Applied Mathematics (Vol I & N. Wartikar and J. N. Wartikar       Pule Vidyarthi Griha Prakashan, Pune         3       Higher Engineering Mathematics       B. S. Grewal       S. Chand & CO. Pvt. Ltd., New Delhi.         4       Higher Engineering Mathematics       B. V. Ramana, 11th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Applied Mathematics       B. V. Ramana, 11th reprint, 2010.       Tata McGraw Hill New Delhi				prepare stud	lent to	use it fo	or anal	ysis of data		eiu or erigina	sening and
Matrix Algebra : Introduction to matrices, Rank of a matrix, Consistency of system of linear equations, Linear and orthogonal transformations, Cayley- Hamilton Theorem.         [7Hrs]           Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.         [6Hrs]           Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.         [6Hrs]           First OrderDifferentialEquations: First order and first degree differential equations: Linear, Reducible to linear & Exact differential equations (excluding the cases of Integrating Factor), Applications of differential equations.         [6Hrs]           Unit II         [6Hrs]         [8Hrs]           Higher OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.         [7Hrs]           Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.         [7Hrs]           1         Higher Engineering Mathematics         B. S. Grewal         Khanna Publisher, New Delhi.           2         A Text Book of Applied Mathematics (Vol I P. N. Wartikar and J. N. Wew Delhi.         Pune Vidyarthi Griha Prakashan, Pune           3         Higher Engineering Mathematics         B. V. Ramana, 11th reprint, 2010.         T	Unit I										[7Hrs]
transformations, Cayley- Hamilton Theorem.         (Init II       [7Hrs]         Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.       [6Hrs]         [First OrderDifferentialEquations: First order and first degree differential equations: Linear, Reducible to linear & Exact differential equations (excluding the cases of Integrating Factor), Applications of differential equations.       [8Hrs]         Migher OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.       [7Hrs]         Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.       Publisher         Migher Engineering Mathematics       B. S. Grewal       Mathematics Publisher         1       Higher Engineering Mathematics       B. S. Grewal       Khanna Publishers, New Delhi.       New Delhi.       Prakashan, Pune       3       Higher Engineering Mathematics       B. S. Grewal       Khanna Publishers, New Delhi       New Delhi.       Prakashan, Pune       3       S. Chand & CO. Pvt.       Ratical expectations, Delhi       New Delhi.       Prakashan, Pune       3       S. Chand & CO. Pvt.	Matrix /	Algebra :	Introduction to matrices, ,	Rank of a matrix, 0	Consist	tency o	f syste	m of linear e	equations, Line	ear and ortho	ogonal
Unit II         [7Hrs]           Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.         [6Hrs]           Unit III         [6Hrs]           First OrderDifferentialEquations: First order and first degree differential equations. Linear, Reducible to linear & Exact differential equations (excluding the cases of Integrating Factor), Applications of differential equations.         [6Hrs]           Unit IV         [8Hrs]         [8Hrs]           Higher OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.         [7Hrs]           Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.         [7Hrs]           Text Books         B. S. Grewal         Khanna Publisher, New Delhi.           1         Higher Engineering Mathematics         B. S. Grewal         Khanna Publisher, New Delhi.           2         A Text Book of Applied Mathematics (Vol P. N. Wartikar and J. N. Wartikar         Prakashan, Pune         S. Chand & CO. Pvt.           3         Higher Engineering Mathematics         B.V. Ramana, 11th reprint, 2010.         TataMcGraw Hill New Delhi.           2         A Text Book of Engineering Mathematics         B.V. Ramana, 11th reprint, 2010.	transfor	mations,	Cayley- Hamilton Theoren	n.							
Statistics: Fitting of straight line, parabola and exponential curves by method of least squares, Coefficient of correlation and lines of regressions, Rank correlation.         (Mrti interpretation interpretati	Unit II								_		[7Hrs]
Unit III       [6Hrs]         First OrderDifferentialEquations: First order and first degree differential equations: Linear, Reducible to linear & Exact differential equations (excluding the cases of Integrating Factor), Applications of differential equations.       [8Hrs]         Higher OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.       [8Hrs]         Higher OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.       [8Hrs]         Unit V       [7Hrs]         Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.       [7Hrs]         Text Books       Title       Authors       Edition       Publisher         1       Higher Engineering Mathematics (Vol       P. N. Wartikar and J. N.       Pune Vidyarthi Griha         2       A Text Book of Applied Mathematics (Vol       P. N. Wartikar       Prakashan, Pune         3       Higher Engineering Mathematics       B. V. Das and Er.       S. Chand & CO. Pvt.         3       Higher Engineering Mathematics       B.V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Engineering Mathematics	Statisti of regre	<b>cs:</b> Fittinę ssions, R	g of straight line, parabola ank correlation.	and exponential cu	urves b	y meth	od of I	east square	es, Coefficient	of correlation	n and lines
First OrderDifferentialEquations: First order and first degree differential equations: Linear, Reducible to linear & Exact differential equations (excluding the cases of Integrating Factor), Applications of differential equations.         Unit IV       [8Hrs]         Imige OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.       [7Hrs]         Intel CorderDifferentialEquations: Higher order differential equations.       [7Hrs]         Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.       Publisher         S.N.       Title       Authors       Edition       Publisher         1       Higher Engineering Mathematics (Vol Vol P. N. Wartikar and J. N.       Pune Vidyarthi Griha       Prakashan, Pune         2       A Text Book of Applied Mathematics (Vol I & N. Das and Er.       S. Chand & CO. Pvt.       Ltd., New Delhi         3       Higher Engineering Mathematics       B. V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Engineering Mathematics       B. V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         3       A Text Book of Engin	Unit III										[6Hrs]
Sector (excluding the cases of Integrating Factor), Applications of differential equations.         [8Hrs]         Higher OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.         Init V         [7Hrs]         Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.         Text Books         S.N.       Title       Authors       Edition       Publisher         A Text Book of Applied Mathematics (Vol       P. N. Wartikar and J. N.       Pune Vidyarthi Griha         A Text Book of Applied Mathematics (Vol       P. N. Wartikar and J. N.       Pune Vidyarthi Griha         3       Higher Engineering Mathematics       H. K. Das and Er.       S. Chand & CO. Pvt.         1       Ltd. II       Wartikar       S. Chand & CO. Pvt.       Ltd., New Delhi         3       A Text Book of Engineering Mathematics       B. V. Ramana,       111th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Engineering Mathematics	First Or	rderDiffe	rentialEquations: First or	der and first degree	e differe	ential e	quatior	ns: Linear, F	Reducible to lin	near & Exact	differential
Unit IV       [8Hrs]         Higher OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.       [7Hrs]         Unit V       [7Hrs]         Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.       [7Hrs]         Text Books       S.N.       Title       Authors       Edition       Publisher         1       Higher Engineering Mathematics       B. S. Grewal       Khanna Publishers, New Delhi.         2       A Text Book of Applied Mathematics (Vol I & N. Wartikar and J. N. Wartikar       Pune Vidyarthi Griha         3       Higher Engineering Mathematics       H. K. Das and Er. Rajnish Verma       S. Chand & CO. Pvt. Ltd., New Delhi         3       Higher Engineering Mathematics       B. V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Engineering Mathematics       Peter O' Neil       Thomson Asia Pvt. Ltd., Singapore.       Singapore.         3       Advanced Engineering Mathematics       Erwin Kreyszig       John Wiley & Sons, New York.	equation	ns (exclud	ding the cases of Integratir	ng Factor), Applicat	ions of	differe	ntial eo	quations.			
Higher OrderDifferentialEquations: Higher order differential equations with constant coefficients, Method of variation of parameters, Cauchy's homogeneous linear equation, Applications of differential equations.       Image: Cauchy's homogeneous linear equation, Applications of differential equations.         Unit V       [7Hrs]         Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.       [7Hrs]         Text Books       S.N.       Title       Authors       Edition       Publisher         1       Higher Engineering Mathematics       B. S. Grewal       Khanna Publishers, New Delhi.         2       A Text Book of Applied Mathematics (Vol I & P. N. Wartikar and J. N. Wartikar       Pune Vidyarthi Griha         3       Higher Engineering Mathematics       H. K. Das and Er. Rajnish Verma       S. Chand & CO. Pvt. Ltd., New Delhi         3       Higher Engineering Mathematics       B.V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Engineering Mathematics       B.V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Engineering Mathematics       Peter O' Neil       Thomson Asia Pvt. Ltd., Singapore.         3       Advanced Engineering Mathematics       Erwin Kreyszig       John Wiley & Sons, New York.	Unit IV										[8Hrs]
Unit V       [7Hrs]         Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.         Text Books         S. N.       Title       Authors       Edition       Publisher         1       Higher Engineering Mathematics       B. S. Grewal       Khanna Publishers, New Delhi.         2       A Text Book of Applied Mathematics (Vol I & N. Wartikar and J. N. Use Vigarthi Griha       Pune Vidyarthi Griha         3       Higher Engineering Mathematics       H. K. Das and Er. Rajnish Verma       S. Chand & CO. Pvt. Ltd., New Delhi         3       Higher Engineering Mathematics       B.V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         1       Higher Engineering Mathematics       B.V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Engineering Mathematics       Peter O' Neil       Thomson Asia Pvt. Ltd., Singapore.         3       Advanced Engineering Mathematics       Erwin Kreyszig       John Wiley & Sons, New York.	Higher parame	OrderDi ters, Cau	fferentialEquations: Hig chy's homogeneous linear	her order differen equation, Applicati	ntial eq ions of	uation: differe	s with ntial ec	constant o juations.	coefficients, N	Nethod of v	ariation of
Probability : Random Variable: Discrete & Continuous random Variable, Distribution function, Mathematical expectations, Variance and Standard deviation.         Text Books       S.N.       Title       Authors       Edition       Publisher         1       Higher Engineering Mathematics       B. S. Grewal       Khanna Publishers, New Delhi.         2       A Text Book of Applied Mathematics (Vol       P. N. Wartikar and J. N.       Pune Vidyarthi Griha         3       Higher Engineering Mathematics       H. K. Das and Er.       S. Chand & CO. Pvt.         3       Higher Engineering Mathematics       B. V. Ramana,       11th reprint, 2010.         2       A Text Book of Engineering Mathematics       B.V. Ramana,       11th reprint, 2010.         3       A Text Book of Engineering Mathematics       Peter O' Neil       Thomson Asia Pvt. Ltd., Singapore.         3       Advanced Engineering Mathematics       Erwin Kreyszig       John Wiley & Sons, New York.	Unit V										[7Hrs]
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S. N.TitleAuthorsEditionPublisher1Higher Engineering MathematicsB. S. GrewalKhanna Publishers, New Delhi.2A Text Book of Applied Mathematics (Vol I & II)P. N. Wartikar and J. N. WartikarPune Vidyarthi Griha Prakashan, Pune3Higher Engineering MathematicsH. K. Das and Er. Rajnish VermaS. Chand & CO. Pvt. Ltd., New Delhi3Higher Engineering MathematicsB. V. Ramana, B.V. Ramana,11th reprint, 2010.Tata McGraw Hill New Delhi2A Text Book of Engineering MathematicsPeter O' NeilTata McGraw Hill New DelhiSingapore.3Advanced Engineering MathematicsErwin KreyszigJohn Wiley & Sons, New York.	Text Bo	ooks									
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2I & II)WartikarPrakashan, Pune3Higher Engineering MathematicsH. K. Das and Er. Rajnish VermaS. Chand & CO. Pvt. Ltd., New DelhiReference BooksEditionPublisher1Higher Engineering MathematicsB.V. Ramana, Peter O' Neil11th reprint, 2010.Tata McGraw Hill New Delhi2A Text Book of Engineering MathematicsPeter O' NeilThomson Asia Pvt. Ltd., Singapore.Singapore.3Advanced Engineering MathematicsErwin KreyszigJohn Wiley & Sons, New York.		A Text I	Book of Applied Mathemat	tics (Vol P. N. Wa	P. N. Wartikar and J. N.		N.			Pune Vidya	rthi Griha
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3       Higher Engineering Mathematics       Rajnish Verma       Ltd., New Delhi         Reference Books       Authors       Edition       Publisher         1       Higher Engineering Mathematics       B.V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Engineering Mathematics       Peter O' Neil       Thomson Asia Pvt. Ltd., Singapore.         3       Advanced Engineering Mathematics       Erwin Kreyszig       John Wiley & Sons, New York.				Н. К.	H. K. Das and Er.					S. Chand & CO. Pvt.	
Reference Books         S. N.       Title       Authors       Edition       Publisher         1       Higher Engineering Mathematics       B.V. Ramana,       11th reprint, 2010.       Tata McGraw Hill New Delhi         2       A Text Book of Engineering Mathematics       Peter O' Neil       Thomson Asia Pvt. Ltd., Singapore.         3       Advanced Engineering Mathematics       Erwin Kreyszig       Image: New York.	3	Hig	her Engineering Mathema	itics Raji	nish Ve	erma				Ltd., Nev	v Delhi
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2       A Text Book of Engineering Mathematics       Peter O' Neil       Thomson Asia Pvt. Ltd., Singapore.         3       Advanced Engineering Mathematics       Erwin Kreyszig       John Wiley & Sons, New York.	1	Hig	her Engineering Mathema	tics B.V	'. Rama	ana,		11th reprin	it, 2010.	Tata McGrav Dell	w Hill New ni
2     A Text Book of Engineering Mathematics     Peter O' Neil     Singapore.       3     Advanced Engineering Mathematics     Erwin Kreyszig     John Wiley & Sons, New York.		A T	Deels of Englisher Marth		1 O' 1	u a il			7	Thomson Asi	a Pvt. Ltd.,
3 Advanced Engineering Mathematics Erwin Kreyszig John Wiley & Sons, New York.	2	Alext	BOOK OF Engineering Math	ematics Pe	ter O' N	vell				Singap	ore.
3 Advanced Engineering Mathematics Erwin Kreyszig New York.		م ال	need Engline gring Mathematic		<b>_</b>					John Wiley	& Sons,
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B.Tech. Scheme of Examination & Syllabus 2023-24 ENGINEERING, SCIENCES & HUMANITIES

# FIRST SEMESTER (GROUP-I) / SECOND SEMESTER (GROUP-II)

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
ES103T	Engineering Practices - I (Electrical &	2	-	-	3	CA	ESE	Total
	Electronics)	3				30	70	100

Course Objectives		Course Outcomes				
<ul> <li>The goal of this course is to introduce advanced concepts of</li> <li>1. To understand the basic fundamentals of Electrical &amp; Electronics engineering.</li> <li>2. To summarize and apply the basic concepts of Electrical &amp; Electronics engineering.</li> </ul>	<ul> <li>Students will be able to</li> <li>Understand the different electrical components and devices.</li> <li>Understand the basic working of AC/DC motors.</li> <li>Understand the properties of materials, working principles of various electronic devices and illustrate their applications</li> <li>Recognize &amp; Understand, the working of different electronics instruments and different types of sensors to use them in real time applications</li> <li>Understand the basics of Boolean algebra, number system, types of signals</li> </ul>					
Unit I		[8Hrs]				
DC Electric Circuit: Introduction to Voltage, Current, Resistor, Ohm's Law, Series and Parallel Connections with Numericals, Kirchhoff's Laws with numerical, Types of electrical energy Sources (Ideal and Practical Independent Sources only). AC Electric Circuit: Generation of Single Phase A.C. power, A.C. fundamentals, Steady state behavior of R-L-C circuit with excitation, Numerical. Resonance in Series R-L-C circuit.						
Unit II		[6Hrs]				
Introduction to Electrical Power System: Intro presentation. Utilization of Electrical Energy: I ELCB (RCCB), tariff, types of tariff & calculation	oduction to Power Necessity of equip of household elect	Generation (Thermal, Hydro, and Solar) with block schematic oment earthling, Importance of Fuses, Basic operation of MCB, ctricity bill.				
Unit III		[10Hrs]				
Introduction to Electrical Machines: Basics of Magnetic circuit, Basic principle of operation, construction, classification and application of: single phase Transformer, D.C. Motor, BLDC Motor, Stepper Motor, Universal Motor. Introduction to Electronic Devices : Types of Semiconductors, P-N Junction, V-I Characteristics of PN junction diode, applications, LED, photo diode, Zener diode, Bipola, Junction, Transister: types, configuration and applications, photo transister, solar cell						
Unit IV		[6Hrs]				
Electronics Instrumentation : Analog ammeter and voltmeter, Block diagram of digital multimeter, Power Supplies (single & dual) Introduction to Transducers and Sensors, Classification, Applications. LVDT, LDR & Temperature Sensor & its types.						
Unit V		[6Hrs]				
Unit 5: Digital electronics : Number system- binary, decimal, hexadecimal, Logic gates, Boolean Algebra, De-Morgan's theorem,						

Introduction to microprocessors and Microcontrollers & its applications.

Text Books

2

Fundamentals of Digital Circuits

S.N	Title	Authors		Edition	Publisher		
1	A Text Book of Electrical Technology	B. L. Theraja and A. K.Theraja,		(Volume I, II & III)	S. Chand and Company		
2	Electronic Devices and Circuits,	N. Suresh Kumar, S. Salivahanan,		4 th Edition	Mc-Graw Hill Education Pvt. Ltd. New Delhi		
3	Modern Digital Electronics,	R. P. Jain		4 th Edition,	Mc-Graw Hill Education,		
Reference Books							
S.N	Title		Authors	Edition	Publisher		
1	1 Integrated Electronics, ,		J. Millman, C. Halkias,	4 th Edition,	Mc-Graw Hill Education		

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# **B.** Tech. Scheme of Examination & Syllabus 2023-24 ENGINEERING, SCIENCES AND HUMANITIES

# FIRST SEMESTER (GROUP-I) / SECOND SEMESTER (GROUP-II)

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
E\$102D	Engineering Practices - I Lab			2	1	CA	ESE	Total
ESTUSP	(Electrical & Electronics)	-	-	2	•	25	25	50
				1	11			1

Course Objectives	Course Outcomes
This course is intended	Student will able to
<ul> <li>To understand the basic fundamentals of Electrical &amp; Electronics engineering.</li> <li>To summarize and apply the basic concepts of Electrical &amp; Electronics engineering.</li> </ul>	<ul> <li>Develop circuits using bread board.</li> <li>Verify truth tables of gates.</li> <li>Study RLC circuit and transformer</li> </ul>

Expt. No.	Title
1	To study basic electrical and electronic components.
2	To visit and study solar power plant generation unit at rooftop.
3	To study LDR and LED circuit.
4	To verify truth tables of basic gates.
5	To verify NAND gate as universal gate.
6	To study KCL and KVL equations.
7	To study series RLC circuit.
8	To study and demonstrate single phase transformer/dimmerstat.

#### **Text Books**

S. N	Title	Authors	Edition	Publisher
1				
1	A Text Book of Electrical Technology	B. L. Theraja and A.	(Volume I,	S. Chand and
		K.Theraja,	II & III)	Company
2	Electronic Devices and Circuits,	N. Suresh Kumar, S.	4 th Edition	Mc-Graw Hill Education
		Salivahanan,		Pvt. Ltd. New Delhi
3	Modern Digital Electronics,	R. P. Jain	4 th	Mc-Graw Hill
			Edition,	Education,

S. N	Title	Authors	Edition	Publisher	
1	Integrated Electronics, ,	J. Millman, C. Halkias,	4 th Edition,	Mc-Graw Hill Education	
2	Fundamentals of Digital Circuits	A. Anand Kumar,		PHI Learning Pvt. Ltd.	

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**B.** Tech. Scheme of Examination & Syllabus 2023-24 ENGINEERING, SCIENCES AND HUMANITIES

# **GROUP 1: SEMESTER I / GROUP 2: SEMESTER II**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
ES104T	Logio Building With C	2			2	CA	ESE	Total
	Logic Building with C		-	-	2	15 35	50	

Course Objectives	Course Outcomes
This course is intended	Students will be able to
• To make the student learn a programming language.	<ul> <li>Develop problem solving logic.</li> </ul>
<ul> <li>To learn problem solving techniques.</li> </ul>	<ul> <li>Analyse and design problems.</li> </ul>
• To teach the student to write programs in C and to solve	<ul> <li>Understand the fundamentals of C Programs.</li> </ul>
the problems	<ul> <li>Implement decision making control structures.</li> </ul>
	Implement loop control structures.
Unit I	[4Hrs]
Logic Building:	
Mathematical Preliminaries: Numbers, Number System, su	m, product, powers, factorials, Fibonacci numbers, Armstrong
numbers.	
Problem solving techniques: Modular, Top-down, Bottom-up	, Structured Programming, advantages and disadvantages.
Information Structures: Array, Linked List, Trees, Graphs.	
Unit II	[5Hrs]
Algorithms and Flowcharts:	
Characteristics, Advantages and Disadvantages of algorithm	ms, pseudo-code conventions, Characteristics of flowcharts,
flowchart symbols, Advantages and Disadvantages of flowchart	S.
Unit III	[5Hrs]
Fundamentals of C: C Character Set, Identifiers, Keywords,	Data Types, Constants, Variables, Declarations, Expressions,
Statements, Symbolic Constants.	
Operators and Expressions: Arithmetic Operators, Unary	Operators, Relational and Logical Operators, Assignment
Operators the Conditional Operator, Hierarchy of operations.	
Unit IV	[5Hrs]
Data Input and Output library functions.	- · ·
Decision Making Control Structures: if, if-else, nested if state	ements, Forms of if, Switch Case Statement.
Unit V	[5Hrs]
Loop Control Structures: For Loop, While Loop, Do-While Lo	op, Nesting of Loops, break and continue statement.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Programming in ANSI C	E. Balguruswamy	2 <sup>nd</sup>	Tata Mc-Graw Hill
2	Programming Techniques Through 'C'	M. G. Venkateshmurthy	2 <sup>nd</sup>	Pearson
3	Let Us 'C'	Yashwant P. Kanetkar	1 <sup>st</sup>	BPB
4	Programming With C	Byron S. Gottfried	2 <sup>nd</sup>	Schaum Series
5	How to solve it by Computer	R.G. Dromey	1 <sup>st</sup>	Pearson Education

S.N	Title	Authors	Edition	Publisher
1	The Complete Reference C	Herbert Schildt	4 <sup>th</sup>	Tata Mc-Graw Hill
2	The 'C' programming language	Kernighan and Ritchie	1 <sup>st</sup>	Prentice Hall
3	Programming and Problem Solving	M. Sprankle	2 <sup>nd</sup>	Pearson Education

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**B.** Tech. Scheme of Examination & Syllabus 2023-24 ENGINEERING, SCIENCES AND HUMANITIES

# **GROUP 1: SEMESTER I / GROUP 2: SEMESTER II**

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
ES104P	Logic Building With C Lab	-	-	2	1	CA 25	ESE 25	Total 50

Course Objectives	Course Outcomes
This course is intended	Student will able to
<ul> <li>To make the students learn a programming language.</li> <li>To learn problem solving techniques.</li> <li>To teach the student to write C programs and to solve the problems.</li> </ul>	<ul> <li>Develop problem soving logic.</li> <li>Analyse and design problems.</li> <li>Understand the fundamentals of C Programs.</li> <li>Implement decision making control structures.</li> <li>Implement loop control structures.</li> </ul>

Expt. No.	Title
1	To study Number System.
2	To study problem solving techniques.
3	To study operators and variables.
4	To study simple If and If-else statement.
5	To study If-else if ladder and nested If control structures.
6	To study Switch-case statement.
7	To study While loop structure.
8	To study Do-while loop structure.
9	To study for loop structure.
10	To study Nested loops, break and continue statement.

#### **Text Books**

S. N	Title	Authors	Edition	Publisher
1	Programming in ANSI C	E. Balguruswamy	2 <sup>nd</sup>	Tata Mc-Graw Hill
2	Programming Techniques Through 'C'	M. G. Venkateshmurthy	2 <sup>nd</sup>	Pearson
3	Let Us 'C'	Yashwant P. Kanetkar	1 <sup>st</sup>	BPB
4	Programming With C	Byron S. Gottfried	2 <sup>nd</sup>	Schaum Series
5	How to solve it by Computer	R. G. Dromey	1 <sup>st</sup>	Pearson Education

S. N	Title	Authors	Edition	Publisher
1	The Complete Reference C	Herbert Schildt	4 <sup>th</sup>	Tata Mc-Graw Hill
2	The 'C' programming language	Kernighan and Ritchie	1 <sup>st</sup>	Prentice Hall
3	Programming and Problem Solving	M. Sprankle	2 <sup>nd</sup>	Pearson Education

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**ENGINEERING, SCIENCES & HUMANITIES** 

#### FIRST SEMESTER (Group I / Group II)

Course Code	Course Name	Th	Tu	Pr	Credits	E	valuation	
E\$105D	Business Communication Skills I.I.ab			2	1 <u>CA ESE</u> 25 25	CA	ESE	Total
ESTUSP	Business Communication Skins I Lab	-	-	2		50		

Course Objectives	Course Outcomes
To empower students to develop a career oriented mindset while harnessing the power of LSRW skills.	<ul> <li>Students will be able to:</li> <li>1. apply verbal and non-verbal skills to confidently and effectively deliver presentations.</li> <li>2. prepare themselves for overall language ability through listening and reading tasks.</li> <li>3. demonstrate formal writing skills.</li> <li>4. draft impactful Resumes and Cover Letters.</li> <li>5. prepare themselves for Personal Interviews.</li> </ul>

Expt. No.	Title of the experiment				
1	Presentation Skills				
2	Poster Making (Product/ Event)				
3	Reading Comprehension for Competitive Exams.				
4	Writing Skills for Academic Purposes.				
5	Listening Skills I				
6	Business Correspondence I				
7	Resume Writing and Cover Letter				
8	Mock Interviews				

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

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## FIRST SEMESTER (Group I / Group II)

Cours	e Code		Course Nam	ne	Th	Tu	Pr	Credits	Evaluation			
ES1	106T	Indian	Knowledge	Svetome	2	_	_	2	CA		ESE	Total
LJ	1001	inulan	Kilowieuge	Systems	2	-	-	2	15		35	50
	Course O	bjectives	Student will	bo ablo to:		C	ourse	Outcom	es			
of li	ndian	philosophical	1 demonstra	be able to.	ndersta	ndina c	f India	n numera	al systems			
system	s. Indian	thought in a	2. develop a	comprehensive u	inderst	anding	of India	an astron	omy and the	e Indi	an calendar	system.
multidis	sciplinary	and	3. understand	d the fundamenta	al conce	epts of	Ayurve	da.				0)010111
interdis	interdisciplinary mode. 4.critically analyze and appreciate the diverse philosophical traditions of India.											
5. understand the significance of cultural preservation and heritage.												
	i											
Unit I: I	Indian Ma	thematics										[5Hrs]
A. Salie	ent feature	s of the Indian	numeral syst	em - Importance	of deci	imal rep	present	tation - Tl	he discover	/ of z	ero and its ir	nportance,
Unique	approach	es to represent	numbers.								<b>6</b> - 10	
B. Uniq	lue aspect	s of Indian mati	hematics - G	reat mathematici	ans and	d their	SIGNIFIC	ant contri	ibutions in ti	ne are	ea of arithme	etic,
India	i, geometi	y, ingonometry,	, combination		lanuai	1-585118		gala, Dilla	ary mathem	alles	and mayic s	quales in
maia.												
Unit II:	Highligh	ts of Indian As	tronomy									[5Hrs]
A. Histo	orical dev	elopment of as	stronomy in	India - The Cele	estial C	coordina	ate, Sy	vstem - A	Astronomica	l terr	ninologies -	Equinotical
points,	precessio	n of eqinoxes, r	novable and	fixed.			~					
B. Eler	ments of	the Indian cal	endar: Notic	on of years and	monti	hs, Pa	ncanga	a – The	Indian cal	endai	r system, A	stronomical
Instrum	ients (Yan	itras), Jantarivia	ntar of Raja	Jai Singn Sawai.								
Unit III:	: Indian H	ealth Sciences	5									[5Hrs]
A. Vedi	ic foundat	ions of Ayurved	la. Ayurveda	is concerned bo	th with	mainte	enance	of good	health and	treatr	ment of dise	ases. Basic
concep	ts of Ayur	veda. The three	e Gunas and	Three Doshas, P	ancha-	mahab	huta ai	nd Sapta	-dhatu.			
B. The	importanc	e of Agni (diges	stion). Six Ra	isas and their rela	ation to	Dosha	is. Ayu	rvedic vie	ew of the ca	use o	of diseases.	
Unit IV	: Indian P	hilosophy										[5Hrs]
A. Scho	ools of In	dian Philosoph	y: Overview	of the major phi	ilosoph	ical sc	hools i	n India, i	including Ve	edant	a, Nyaya, V	aisheshika,
Samkhy	ya, Yoga,	and Mimamsa.	Examination	of their metaphy	sical, e	pistem	ologica	al, and eth	nical theorie	s.		
B. India	an Ethics:	Study of ethica	al frameworks	s in Indian philos	ophy, i	ncludin	g conc	epts like	dharma (m	oral c	duty), karma	(action and
its cons	sequences	s), and the pursu	uit of virtue a	nd righteousness	S.							
Linit V·	Indian Ti	aditional Prac	ticos									[4Hrs]
A Unio	ue Traditi	onal Practices	Myths Ritua	als Spirituals Ta	hoos a	nd Beli	ef Svst	tem Folk	Stories Sc	anas	Proverbs D	ance Play
Acts an	d Traditio	nal Narratives.	wytho, retue		5000 u		or cyc			Jingo,	11000100, D	anoo, may,
B. India	an Fine A	rts: The import	tance of Gar	ndharva-veda. Na	atvasas	stra: th	e natur	re and p	urpose of fi	ne ai	rts. Different	schools of
music,	dance and	d painting in diff	erent regions	s of India. Importa	ant exa	mples	of India	n paintin	g in various	part	of India.	
Deferre		-	-						-			
Refere		S:		Autho			المالية			<b>D</b> I	hliakar	
5. N	History	I Itle	matics		ors		106	on 7 Th		Pul	blisner	
1.	TIISTOLA		analica	Satishchandra	Chateri	iee	190			55		
2.	Introduc	tion to Indian P	hilosophy	Dhirendramoha	an Datta	a ,	7th	Ru	pa Publicati	ons l	ndia	
3.	Holistic	Science and Ve	edant	Swami Jitatmar	nand		1st	Bh	aratiya Vidy	aBha	avan, Bomba	y, 1991
4.	Arts of I	ndia		Krishna Chaitar	nya		1st	Ab	hinav Public	ation	ns, 1987	
5.	History	of Astronomy in	n India.	S.N.Sen&K.S.S	Shukla		2ns	s INS	SA Delhi,20	01		
				-								

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Chairman - BoS	Dean – Academics	Date of Release	Version	



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**B. Tech. Scheme of Examination & Syllabus 2023-24** 

**ENGINEERING, SCIENCES & HUMANITIES** 

## SECOND SEMESTER

Course Code	Co	urse Name Th Tu Pr Credits E						Evaluation		
ESOOT	202T Applied Mathematics II 2 1 0	4	CA	ESE	Total					
E32021	Applied Mathematics - II			1	U	4	30	70	100	
Course Obje	ectives	Course Outcomes								
To inculcate and	strengthen	Students will be able t	o:							
students with	adequate	• Apply numerical integration methods and find analytical solutions to difference equations.								
knowledge of		Understand the concept of multivariable differential calculus & apply the knowledge							dge of	
<ul> <li>Differential &amp; Integ</li> </ul>	gral calculus	applications of differentiation.								
Vector calculus		<ul> <li>Implement concept of vector calculus to solve engineering problems.</li> </ul>								
<ul> <li>Probability distribution</li> </ul>	itions	• Evaluate improper Integrals and apply concept of multiple integrals in engineering field.								

Apply concept of probability distributions to engineering problems.

Unit I	[7Hrs]				
Finite Differences: Operator E and delta, Factorial Polynomial, N	Numerical integration: Trapezoidal rule, Simpson's 1/3 rule,				
Simpson's 3/8 rule, Difference equations with constantcoefficients	S.				
Unit II	[7Hrs]				
<b>Multivariate Calculus:</b> Functions of several variables and their par and its properties, Maxima –Minima of functions of two variables, La	tial derivatives, Chain rule and total differential coefficient, Jacobians agrange's method of undetermined multipliers.				
Unit III	[8Hrs]				
VectorCalculus: Vector differentiation, Gradient, Directional de Solenoidal and irrotationalmotions, Scalar potential, Line integral	erivatives, Divergence and Curl with their physical interpretation & Work done.				
Unit IV	[7Hrs]				
IntegralCalculus: Beta and Gamma functions, Differentiation of	definite integral, Elementary double integrals (cartesian & polar).				
Unit V	[6Hrs]				
Probability Distributions: Binomial Distribution, Poison's Distribution, Normal Distribution.					

#### **Text Books**

S. N.	Title	Authors	Edition	Publisher				
1	Higher Engineering Mathematics	B. S. Grewal	40 <sup>th</sup>	Khanna Publishers, New Delhi.				
2	Higher Engineering Mathematics	H. K. Dass and Er. Rajnish Verma		S. Chand & Co. Pvt. Ltd., New Delhi.				
3	Advanced Engineering Mathematics	Erwin Kreyszig		John Wiley & Sons, New York.				
Refere	Reference Books							

Title Edition Publisher S. N. Authors **Higher Engineering Mathematics** B. V. Ramana Tata McGraw-Hill Publications, 1 New Delhi. 2 Advanced Engineering Mathematics C. R. Wylie & L. C. Barrett Tata McGraw-Hill Publications, New Delhi. Peter O' Neil 3 A Text Book of Engineering Thomson Asia Pvt. Ltd., Singapore. Mathematics Schaum's Outline of Probability and John J. Schiller, R. Alu 4<sup>th</sup> McGraw-Hill Education. 4 Statistics Srinivasan and Murray R. Spiegel

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