Veermata Jijabai Technological Institute (V.J.T.I)

(Central Technological Institute, Maharashtra State, INDIA)

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PROGRAMME NAME: DIPLOMA IN MECHANICALENGINEERING

Programme Code : DME — **With Effect From Academic Year: 2023-24**

Duration of Programme : 6 Semester — **Duration: 16 Weeks**

Semester : First — **Scheme: R-2023**

Sr No	Course Title	Abbreva-tion	Course Type	Course Code	Total IKS Hrs for Sem.	Learning Scheme					Credits	Assessment Scheme												
						Actual Contact Hrs./Week			Self-Learning (Term Work + Assignment)	Notional Learning Hours /Week		Paper Duration (hrs.)	Theory					Based on LL & TL				Based on Self Learning		Total Marks
																		Practical						
						CL	TL	LL					FA-TH (MST)	SA-TH (ESE)		Total		FA (CA)		SA (PR/OR)		SLA		
													Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
1	MATHEMATICS -I	MS-I	AEC	234MA11	6	4	2	-	2	8	4	3	30	70	28	100	40	25	10	-	-	25	10	150
2	PHYSICS	PHY	DSC	234PH12	4	4	-	2	2	8	4	3	30	70	28	100	40	25	10	25@	10	25	10	175
3	COMMUNICATION SKILLS (ENGLISH)	ENG	AEC	234HM13	0	3	-	2	1	6	3	3	30	70	28	100	40	25	10	-	-	25	10	150
4	ENGINEERING GRAPHICS-I	EG-I	DSC	234ME14	2	2	-	4	-	6	3	3	30	70	28	100	40	50	20	-	-	-	-	150
5	MECHANICAL WORKSHOP PRACTICES - I	MWP-I	SEC	234ME15	2	2	-	3	1	6	3		-	-		-	-	50	20	50@	20	25	10	125
6	COMPUTER APPLICATIONS	COM	SEC	234ME16	0	1	-	2	1	4	2		-	-		-	-	25	10	25@	10	25	10	75
7	YOGA AND STRESS MANAGEMENT	YSM	VEC	234ME17	1	-	-	1	1	2	1		-	-		-	-	25	10	-	-	25	10	50
Total					**15**	**16**	**2**	**14**	**8**	**40**	**20**		**120**	**280**		**400**		**225**		**100**		**150**		**875**

Abbreviations: CL- Classroom Learning, TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment, SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# Online Examination, @$ Internal Online Examination

Course Category : Discipline Specific Course Core (DSC) : 2, Discipline Specific Elective (DSE) : 0, Value Education Course (VEC) : 1, Intern./Apprentice./Project./Community (INP) : 0, Ability Enhancement Course (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

Curriculum Coordinator — **Head Diploma in Mechanical Engineering** — **Dean Diploma**

DEPT. OF MECHANICAL ENGG. V.J.T.I., Mumbai-19.

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	**: DIPLOMA IN MECHANICAL ENGINEERING**
PROGRAMME CODE	**: DME**
SEMESTER	**: FIRST**
COURSE TITLE	**: MATHEMATICS -I**
COURSE CODE	**: 234MA11a**

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self - learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
4	2	-	2	4	3	30	70	28	100	40	25	10	-	-	25	10	150

II. RATIONALE

To teach students basic facts, concepts and principles of mathematics as tool to analyze engineering problems.

To make students well versed in the prerequisites for further studies in mathematics and engineering.

III. COURSE OUTCOMES (COs)

Students will be able to achieve the following COs on completion of course based learning

- CO1 – Use Determinant and Matrices to solve simultaneous linear equations.
- CO2 – Apply basic concepts in trigonometry to solve engineering problems.
- CO3 – Define function and find limit of function.
  Use derivatives to solve the engineering problems.
- CO4 – Find equation of straight line, under given conditions.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
1		Determinants	5	7	1	40%	40%	20%
	1.1	Determinants of order two and three. Properties of determinants Cramer's rule.						
2		Matrices	7	10	1	40%	40%	20%
	2.1	Transpose of a matrix, identity matrix						
	2.2	Addition and subtraction of matrices, multiplication of matrices						
	2.3	Adjoint of a matrix, inverse of a matrix using adjoint.						
	2.4	Solution of simultaneous linear equations by adjoint method (containing two unknowns)						
3		Straight Lines	3	6	4	40%	40%	20%
	3.1	Equations of straight lines in different forms: Two points form, slope y-intercept form, angle point form.						
	3.2	Angle between two straight lines.						
4		Function	6	6	3	40%	40%	20%
	4.1	Definition of function.						
	4.2	Logarithms and properties, composite functions.						
	4.3	Simple problems based on function						
5		Limits	4	6	3	40%	40%	20%

	5.1	Concept of limit of a function. Theorems on limits (Without proof)						
	5.2	Limits of algebraic functions.						
	5.3	Standard limits: $\lim_{x \to 0} \frac{\sin x}{x}$, simple problems						
6		Indian Knowledge System Information about Ancient Indian Mathematicians	6					

SECTION - II

Unit & Sub-Unit		Topics/Subtopics	Hours	Marks	COs	R Level	U Level	A Level
7		Trigonometry	15	20	2	40%	40%	20%
	7.1	Circular measure, Conversion from degrees to radians and radians to degrees.						
	7.2	Trigonometric ratios of angles in 4 quadrants.						
		Trigonometric identities						
		Trigonometric ratios of negative angles						
	7.3	Compound angle formulae.						
	7.4	Allied angle formulae.						
	7.5	Factorization and de-factorization formulae.						
	7.6	Multiple, submultiples angle formulae.						
	7.7	Inverse trigonometric functions, definition, simple problems						
8		Derivatives	9	15	3	40%	40%	20%
	8.1	First principle, geometrical interpretation						
	8.2	Derivatives of standard functions						

	8.3	Theorems of derivatives. Simple problems						
	8.4	Derivative of composite function. (Chain rule).						
	8.5	Derivative of implicit function, parametric function.						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxanomy).								

V. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COs
1	Determinants	2	1
2	Matrices	2	1
3	Circular Measures, Trigonometric ratios and identities	2	2
4	Compound, allied angles formulae, factorization, de-factorization	2	2
5	Multiple, submultiple formulae	2	2
6	Inverse trigonometric functions	2	2
7	Functions	2	3
8	Limit	2	3
9	Derivatives	2	3
10	straight lines	2	4

VI. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Tutorials
- Mid Semester Test
- Self-learning
- Term Work

Summative Assessment (Assessment of Learning)

- End Semester Examination.

VII. SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

- Activities to help students remember formulae. Two tests based directly only on formulae.
- Find applications in engineering where one or more above concepts are used.

VIII. SUGGESTED COS-POS and COS-PSOS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	1	1	1	-	-	-	2	1	1
CO2	1	3	1	2	-	1	1	1	-
CO3	1	2	1	-	-	-	2	-	1
CO4	1	1	1	1	-	1	1	1	1
Legends :- High:03, Medium:02,Low:01, No Mapping: -									

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	B. M. Patel, J. M. Rawal	Applied Mathematics	Nirali Prakashan
2	S. P. Deshpande	Mathematics for Polytechnic	Pune Vidyarthi Griha Prakashan.
3	Deepak Singh	Mathematics-I	Khanna Book Publishing Co. (P) Ltd. ISBN: 978-93-91505-42-4

Curriculum Coordinator | Head of the Department | Dean Diploma

BOS VJTI Approval dated 1/8/2023

DIPLOMA PROGRAMME	**: DIPLOMA IN MECHANICAL ENGINEERING**
PROGRAMME CODE	**: DME**
SEMESTER	**: FIRST**
COURSE TITLE	**: PHYSICS**
COURSE CODE	**: 234PH12**

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
4	-	2	2	4	3	30	70	28	100	40	25	10	25	10	25	10	175

II. RATIONALE

Physics is a foundation of any engineering discipline. Its principles, laws, rules, results and conclusions drawn from observations and predictions of various phenomena occurring in nature; play important role in solving field problems in engineering and technology.

Though the span of physics is from quark to galaxy or particle physics to astrophysics; here certain topics are carefully selected for particular discipline. These topics will provide sufficient fundamental as well as background knowledge for the particular branch. Proper attention is given to the selection of sub-topics and their depth so that student will be able to cope up with innovations and new technologies in his field.

Various phenomena, principles, laws, rules discovered and invented by physics are used for industrial, engineering and technological applications. The overall growth of various engineering disciplines depends upon the development of physics and its detail understanding.

III. COURSE OUTCOMES (COS)

Students will be able to achieve the following COS on completion of course based learning

- CO1- Use various systems for measurements and measuring instruments.
- CO2 - Understand concepts used in various phenomenon in optics such as wave theory, interference, diffraction, polarization, etc. along with their applications and problem based on it.
- CO3 - Understand longitudinal waves, their velocity, factors affecting velocity of sound, concepts of resonance, laws of vibrating string, sonometer and resonance tube.
- CO4 - Understand concepts, laws and rules used in static and current electricity and apply it to solve problem based on it.
- CO5 - Understand concept of modern physics used in x-rays and photoelectric effect, with their applications and problem based it.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	COS	R Level	U Level	A Level
1	Measurements	10	14	1	40%	40%	20%
1.1	Need of measurements, requirements of standard unit, CGS, MKS, FPS and SI systems, fundamental and derived quantities/units, dimensions.dimensional analysis.						
1.2	Vernier calliper, screw gauge. Least count and range of voltmeter, ammeter and thermometer. problems						
2	Optics	14	21	2	40%	40%	20%
2.1	Wave theory - wave front, wave normal, laws of reflection and refraction, problems, Huygen's principle,total internal reflection.						
2.2	Interference - principle of superposition, constructive and destructive interference, conditions to obtain interference pattern, problems.						
2.3	Diffraction – definition, types of						

	diffraction, single slit diffraction pattern, diffraction grating, grating element, grating formula, problems, determination of wavelength of light.						
2.4	Polarization - polarized and unpolarized light, polarizer, analyzer, optical activity, optical rotation, specific rotation, polarimeter (principle, construction, working and applications)						

SECTION - II							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
3	Sound	7	11	3	40%	40%	20%
3.1	Transverse and longitudinal waves, velocity of sound, newton's formula and Laplace's correction, stationary waves, transverse vibrations on string, Laws of vibrating string,						
3.2	Resonance, Sonometer, Resonance tube closed at one end, Determination of velocity of sound using resonance tube						
4	Static and Current electricity	10	13	4	40%	40%	20%
4.1	Static Electricity – Coulomb's law, One coulomb, Electric field, Electric Potential, Capacitor and problems						
	Current Electricity- Ohm's law, one ohm, resistivity, conductivity, series and parallel combination of resistors, problems, Wheatstone bridge, Joules law.						
5	Modern Physics	7	11	5	40%	40%	20%
5.1	X-rays - Coolidge X-ray tube, continuous characteristic and X-rays, problems, properties and applications, Moseley's law.						
5.2	Photoelectric effect - Planck's theory of radiation, Einstein's						

	photoelectric equation, problems, photocells - photo-emissive, photovoltaic and photoconductive (construction, working and applications)						
5.3	LASER - spontaneous and stimulated emission, absorption, excitation, metastable states, population inversion, optical pumping, lasing action, working of laser, He-Ne laser, properties.						

V. LIST OF PRACTICALS/ASSIGNBMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COS
1	Use of Vernier caliper and observations with Travelling microscope	2	1
2	Use of micrometer screw gauge	2	1
3	Determination of Wavelength of laser using diffraction phenomenon	2	2
4	Determination of grating element.	2	2
5	Verification of first law of vibrating string.	2	3
6	Verification of second law of vibrating string.	2	3
7	To verify Ohm's law	2	4
8	Use of Meter Bridge	2	4
9	Determination of velocity of sound using resonance tube.	2	3
10	Measurement of internal resistance of cell	2	4

VI. SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

Assignments (if any)

- Convert the units of a given physical quantity from one system of units to another.
- Measure room temperature of hot baths / bodies by using mercury thermometer and convert it into different unit systems.
- Enlist information like band gap, material used, dimension about different semiconductor device.
- Give details about the explanation of concept like electrostatics, magnetic domain, and current.

Micro Project (if any)

- Conductivity: Collect different materials such as metal, plastics, glass etc. and prepare chart of their conductivity.
- Vernier Calipers: Prepare prototype Vernier caliper of desired least count using card sheet.
- LDR: Use Light dependent resistor for measuring the intensity of light.

VII. ASSESMENTS METHODOLOGIES /TOOLS

Formative Assessment (Assessment of Learning)

- Mid semester test
- Timely practical journal completion
- Performance in practicals
-

Summative Assessment (Assessment of Learning)

- End Term Exam
- Practical exam

VIII. SUGGESTED COS-POS AND COS-PSOS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	3	2	1	1	-	-	2	2	-
CO2	3	2	1	1	-	-	1	2	-
CO3	3	2	1	1	-	-	1	1	-
CO4	3	2	1	1	-	-	1	2	-
CO5	3	2	1	1	-	-	1	1	-
Legends :- High:03, Medium:02,Low:01, No Mapping: -									

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	--	XIth standard physics book	HSC Board, M.S. / NCERT
2	--	XIIth standard physics book	HSC Board, M.S. I NCERT
3	Halliday D., Resnik R. and Walker	Fundament ls of physics extended	Wiley India, New Delhi, 8th edition
4	Serway RA and Jewett JW	Physics for scientists and Engineers	Cengage learning, New Delhi, 6th edition
5	Verma H C	Concepts of Physics - Part I and II	Bharti Bhavan, New Delhi

Curriculum Coordinator Head of the Department Dean Diploma

BOS VJTI Approval Dt. 01/08/2023

DIPLOMA PROGRAMME	**: DIPLOMA IN MECHANICAL ENGINEERING**
PROGRAMME CODE	**: DME**
SEMESTER	**: FIRST**
COURSE TITLE	**: COMMUNICATION SKILLS**
COURSE CODE	**: 234HM13**

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
3	-	2	1	3	70	30	100	40	25	1	25	10	-	-	25	10	150

II. RATIONALE

Cultivating Reading, Writing, Listening, and Speaking skills in students by giving exposure to good language, enhancing the power of expression through vocabulary exercises, improving skills of composition, promoting coherence in thinking, assimilating and reproducing ideas, and enabling the students to formulate grammatically correct sentences thereby developing their ability to communicate effectively in industry, professional fields, in academic and social circles. Developing life skills by enhancing communication skills. Students will get exposure to leadership qualities (problem-solving attitude) by participating in different curriculum activities. All these will enhance their confidence and build good language. Making students proficient in oral skills through various activities that will enable them to perform efficiently during interviews, meetings, seminars, conferences, group discussions, and negotiations. Thus, developing a problem-solving attitude among students by synergizing their Emotional quotients with their Intellectual quotient through various activities will also provide exposure to learn and groom their soft skills. Giving exposure to self-learning by providing enough materials through the language laboratory's ETNL software and open

source software. Improving technical communication through critical analysis of a situation, drawing appropriate conclusions, and presenting them precisely. Enhancing their Reading, Writing, Speaking, and Listening skills (RWSL) in the English language effectively. In order to develop the writing abilities of students, some textbooks that give exposure to language have been introduced.

- The tutorials have been incorporated to provide practice to the students to develop writing skills.
- Vocabulary exercises are given to enhance word power while writing.
- Grammar topics are taught by giving sufficient practice material to help them formulate grammatically correct sentences.
- Idioms, phrases, and proverbs, Quotations are introduced in order to acquire fluency and richness to their language while expressing ideas through writing.

III. COURSE OUTCOMES (COS)

Students will be able to achieve the following COS on completion of course based learning

- CO1-Acquiring the ability to formulate grammatically correct sentences
- CO2- Improving the power of expression in written communication
- CO3- Developing coherence in thinking, comprehending, and expressing one's ideas in one's own language

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	COS	R Level	U Level	A Level
1	A) Emanating Voices- textbook1 B) Igniting Minds- Textbook-II • The Mother of a Traitor- Maxim Gorky	16	23				

	• Speeches at the world's Parliament of Religions- Swami Vivekananda • Appro JRD -Sudha Murthy • India What can it teach us?-Max Muller • What teenagers Need to Know about Cyber security- Sanjay Goyel C)Written and spoken communication in English • English in use • English for routine communicative function • English in common interactive situations • Speech in practice • Paragraph writing • Essay writing • Application letters as per the Industrial situation D) Critical Analysis • PowerPoint presentation based on texts as well as drawing parallels from industry • Inviting speakers from the industry to deliver lectures connected with the topics in the text.			1	30 %	50%	20%
2	Grammar and sentence formation • Use of technical vocabulary • Verbs kinds and Uses • Tenses kinds and uses • Subject-verb agreement • Active passive voice • Prepositions • Types of sentences	05	03	1	20%	20%	60%

	• One word Substitution						
	Short composition a) Paragraph writing • Coherence • Correct grammar • Good vocabulary • Creative Writing • Proper structure b) Description of an object or a product or a situation. • use of technical words development of ideas developing a story/ poetry/ paragraph	05	05	2	20 %	20%	60%
3.	Comprehension passage a) Summarization of passages in own words.(Newspaper articles, general articles etc) b) Identifying the theme of the passage precisely and enumerating the sub points	03	04	1	30 %	50%	20%

SECTION - II							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Vocabulary Building a) Synonyms b) Antonyms c) Homophones d) One-word substitutes e) Homonyms	08	10	2	20 %	40%	40 %

2	i) Application of grammar a) Correction of common errors in English b) Tenses c) Verbs d) Sentence structure e) Email Etiquette –drafting technique f) leave applications g) grievance letter (campus situations) h) Use of the famous quotations	08	15	1	30%	50%	20%
3	Use of refined language a) Idioms.· b) Proverbs c) Phrases d) Quotations	08	10	2	40%	40%	20%
	TOTAL	48	70				
Legends: R- Remember, U - Understand, A-Apply and above levels (Blooms's Revised Taxonomy)							

V. LIST OF PRACTICALS/ASSIGNMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COS
1.	Synonyms & Antonyms	2	2
2.	Homophones & Homonyms	2	2
3.	Prepositions	2	2
4.	One Word Substitutes	2	2
5.	Official/Industrial letters/ applications	2	2
6	Phrasal verbs	2	2
7	Phonetics- a) Voice Modulation b) Intonation- rise and fall of pitch	2	3

8	Idioms	2	3
9	Email Etiquette	2	2
10	Proverbs	2	3
11.	Sentence structure	2	1
12.	Correction of Errors (grammatical)	2	1
13.	Tenses	4	1
14.	Composition writing a) Short letters (format) b) Paragraph writing	4	3
1.	Synonyms & Antonyms	2	2
2.	Homophones & Homonyms	2	2
3.	Prepositions	2	2
4.	One Word Substitutes	2	2
5.	Official/Industrial letters/ applications	2	2
6	Phrasal verbs	2	2

VI. SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

Assignments (if any)

- Journal Writing/ Maintain a fortnight dairy entry and write the same on the assignment sheets
- Write a blog/post an article and write the same on an assignment sheet

Micro Project (if any)

VII. ASSESMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Practicals
- Midterm Test Exam
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Micro-project/Assignments
- Tutorial Performance

VIII. SUGGESTED COS-POS AND COS-PSOS AND COS-PSOS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	2	-	1	2	-	1	2	1	-
CO2	2	-	2	2	-	1	2	1	-
CO3	2	-	2	2	-	1	2	1	-
Legends :- High:03, Medium:02,Low:01, No Mapping: -									

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/WEBSITES

Sr. No.	Author	Title	Publisher and Edition
1	Board of Editors – Ajiet Ravikant Jachak, Neehal Shikh & Sawan Dharmapuriwar	Emanating Voices (BookI)	Orient Black Swan, First edition, 2019
2	Board of Editors – Indrajeet K Orke, Dr.Madhukarrao Wasnik. P.W.S,Maroti Wagh, Veena Ilame, Manushree	Igniting Minds (Book II)	Orient Black Swan, First edition, 2021
Websites			
1.	https://www.britishcouncil.in/english/learn-online	The website link is given to refer to Unit 1	

2.	Vocabulary.com	Refer to this website for interactive vocabulary quizzes, word lists	
2.	International Phonetic Association (IPA) Website	It offers audio examples and charts to help understand and transcribe sounds	
3.	grammarly.com/blog	For constructing effective paragraphs and improving clarity	

Reference books

Sr. No.	Title	Author	Publisher and Edition
1.	Communication Skills in English	Anjana Tiwari	Khanna Book Publishing Co. (P) Ltd. Website: www.khannabooks.com
2.	Dictionary	Oxford	Oxford University
3.	Synonyms and Antonyms	Sam Philips	Goodwill Publishing House
4.	Written and Spoken Communication in English	V H Sawant, S R Madan & N.A Lavande	Universities Press India Private Limited, 2007.
5.	Communication Language and Skills	Sanghita sen Alankrita Mahendra Priyadarshi Patnaik	Cambridge university Press, First publisded, 2015

Curriculum Coordinator Head of the Department Dean Diploma

BOS VJTI Approval Dt. 01/08/202

DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: FIRST
COURSE TITLE	: ENGINEERING GRAPHICS - I
COURSE CODE	: 234ME14

I. TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
2	-	4	-	3	3	30	70	28	100	40	50	20	-	-	-	-	150

II. RATIONALE

The student should be able to

- Understand the fundamentals of Engineering Graphics
- Read and interpret object drawings.

III. COURSE OUTCOMES

Student should be able to

CO1	To understand geometry of shapes, drawing conventions, definitions and drawing procedures.
CO2	To imagine shapes of solid objects in three dimensions and draw their different views.
CO3	To imagine internal details of solid objects from given views and use of drawing conventions.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1		**Drawing Instruments & their uses**	02	-	1	30	30	40
	1.1	Letters & Numbers (Single stroke Vertical)						
	1.2	Convention of Lines & it's applications						
2		**Engineering Curves**	03	14	1	40	30	30
	2.1	Ellipse, Parabola, Hyperbola by Directrix-Focus method only.						
	2.2	Involute						
	2.3	Cycloid						
3		**Projections of Points & Straight Lines** Reference Planes of projections – HP, VP & PP Orthographic Projections of Points, Projections of Straight Lines with lines inclined to both the reference planes. (Lines to be considered in first quadrant only. Simple problems excluding HT & VT of a line)	6	14	2	40	30	30
4		**Projections of Planes** Projections of circular, square, triangular, regular pentagonal & hexagonal plane surfaces with surfaces inclined to one reference plane & perpendicular to other. (excluding side view)	4	7	2	40	30	30

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SECTION - II								
Unit & Sub-Unit		**Topics/Sub-topics**						
5		**Projections of Solids**	08	18	2,3	40	30	30
		Projections of solids with axis inclined to one reference plane & parallel to other reference plane. (Solids – prisms, pyramids, cylinder, cone & cube)						
6		**Orthographic Projections**	09	17	3	40	30	30
		Orthographic Projections of simple machine parts.						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxonomy).								

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

V. LIST OF PRACTICALS/ASSIGNBMENTS/TUTORIALS

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	1	One sheet on lettering & types of lines	02	1
	2	Three sheets on Engineering Curves.	08	1
	3	Six sheets on Projections of Points & Projections of Straight Lines.	14	2
	4	Two sheets on Projections of Planes.	10	2
	5	Six sheets on the topic of Projections of Solids	16	2
	6	Four sheets on the topic of Orthographic Projections.	14	3

Note - The students should workout the problems on the following topics preferably on quarter imperial drawing sheets during the practical.

VI. ASSESMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Midterm Test Exam
- Term Work

Summative Assessment (Assessment of Learning)

- End Term Exam

VII. SUGGESTED COS-POS AND COS-PSOS AND COS-PSOS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	2	-	1	2	-	1	2	1	-
CO2	2	-	2	2	-	1	2	1	-
CO3	2	-	2	2	-	1	2	1	-
Legends :- High:03, Medium:02,Low:01, No Mapping: -									

VIII. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/WEBSITES

Sr. No.	Author	Title	Publisher and Edition
1	N.D.Bhatt	Engineering Drawing	Charotar Publishers 53rd Edition 2014
2	S.T.Ghan, M.V.Rawalani	Engineering Drawing	Nirali PublicationsEdition -2014/1
3	D.A.Jolhe	Engineering Drawing	TATA McGraw Hill- 2008
4	K.R.Mohan	Engineering Graphics	Dhanpatrai Publishing Co. Ist Edition-2009

Curriculum Coordinator | Head of the Department | Dean Diploma

BOS VJTI Approval Dt. 01/08/2023

DEPT. OF MECHANICAL ENGG. V.J.T.I., Mumbai-19

DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: FIRST
COURSE TITLE	: MECHANICAL WORKSHOP PRACTICES - I
COURSE CODE	: 234ME15

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
2	-	3	1	3	-	-	-	-	-	-	50	20	@ 50	20	25	10	125

II. RATIONALE

To lay a strong foundation in study and practice of basic workshop processes this is the backbone in Engineering.

To make students well versed to identify, select and use various marking, measuring, holding, striking and cutting tools & equipment.

III. COURSE OUTCOMES (COS)

Student should be able to

CO1 Adopt safety practices while operating different equipment and working on various machines. Learn types of engineering material and their properties.

CO2 Operate, control different machines and equipments.

CO3 Inspect and produce the job as per specified dimensions.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	1.1	**Introduction and Demonstration** Introduction to various shops / sections and workshop layouts. Safety norms to be followed in a workshop should be conveyed to students.	7	-	1	2	2	6
	1.2	Introduction to engineering materials						
	1.3	Different types of ferrous and non-ferrous materials.						
	1.5	Properties of Engineering materials.						
2		**Carpentry Shop**	6	-	1,2,3	1	1	6
	2.1	Introduction.						
	2.2	Various types of woods.						
	2.3	Different types of tools, machines and accessories.						
3		**Fitting Shop**	7	-	1,2,3	2	2	4
	3.1	Introduction						
	3.2	Various marking, measuring, cutting, holding and striking tools.						
	3.3	Different fitting operation like chipping, filing, right angle, marking, drilling, tapping etc.						
	3.4	Safety Precautions and Safety Equipments.						
4		**Sheet Metal Working**	8	-	1,2,3	2	2	6
	4.1	Introduction.						
	4.2	Various types of tools, equipments and accessories						
	4.3	Different types of operations in sheet metalshop.						
	4.4	Soldering and riveting.						
	4.5	Safety precautions.						
5		**Forging**	4					
	5.1	Forging operations in smithy shop- Bending operation, upsetting operation,- Safety measures to be observed in the smithy shop		-	2,3	2	2	6

V. LIST OF PRACTICALS/ASSIGNBMENTS/TUTORIALS

Sr. No.	Practical	Approx. Hours	CO
1	**Carpentry Shop:** Demonstration of different wood working tools / machines. Demonstration of different wood working processes, like plaining, marking, chiseling, grooving, turning of wood etc. One simple job involving any one joint like mortise and tenon, dovetail, bridle, half lap etc.	12	2,3
2	**Fitting Shop:** Demonstration of different fitting tools and drilling machines and power tools. Demonstration of different operations like chipping, filing, drilling, tapping, cutting etc. One simple fitting job involving practice of chipping, filing, drilling, tapping, cutting etc.	12	2,3
3	**Smithy shop** Demonstration of different forging tools and Power Hammer. Demonstration of different forging processes like shaping, caulking, fullering, setting down operation etc. One job like hook peg, flat chisel or any hardware item.	12	
4	**Sheet Metal Shop:** Demonstration of different sheet metal tools / machines. Demonstration of different sheet metal operations like sheet cutting, bending, edging, end curling, lancing, soldering and riveting. One simple job involving sheet metal operations and soldering and riveting.	12	2,3

VI. SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

Assignments (if any)

- Write down the assignments on each practical as per instructions.

VII. ASSESMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Term Work

Summative Assessment (Assessment of Learning)

- End Term Assessment of job prepared by students.

VIII. SUGGESTED COS-POS AND COS-PSOS AND COS-PSOS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	2	-	1	2	-	1	2	1	1
CO2	2	-	2	2	-	1	2	1	1
CO3	2	-	2	2	-	1	2	1	1
Legends :- High:03, Medium:02,Low:01, No Mapping: -									

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/WEBSITES

Sr. No.	Author	Title	Publisher and Edition
1	K.C.John	Mechanical Workshop Practice	PHI Learning Pvt Ltd. EEE 2010
2	B.S. Raghuwanshi	Workshop Technology	Dhanpat Rai and sons, New Delhi, 9 th Edition, 2002
3	S.K. Hajra Chaudhary	Workshop Technology Vol I & II	Media Promotors and Publisher, New Delhi. 8 th edition , 1986

Curriculum Coordinator Head of the Department Dean Diploma

BOS VJTI Approval Dt. 01/08/2023

DEPT. OF MECHANICAL ENGG V.J.T.I., Mumbai-19

DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: FIRST
COURSE TITLE	: COMPUTER APPLICATIONS
COURSE CODE	: 234ME16

I. TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
1	-	2	1	2	--	-	-	-	-	-	25	10	@ 25	10	25	10	75

II. RATIONALE

In any typical business setup in order to carry out routine tasks related to create business documents, perform data analysis and its graphical representations and making electronic slide show presentations, the student need to learn various software as office automation tools like word processing applications, spreadsheets and presentation tools. They also need to use these tools formaking their project reports and presentations. The objective of this course is to develop the basic competency in students for using these office automation tools to accomplish the job. This course also presents an overview of emerging technologies so that students of different discipline can appraise the applications of these technologies in their respective domain.

The aim of this course is to help the student

- To create business documents, perform data analysis and its graphical representations and making electronic slide show presentations.
- The student needs to learn various software as office automation tools like word processing applications, spreadsheets and presentation tools.
- They also need to use these tools for making their project reports and presentations.

- The objective of this course is to develop the basic competency in students for using these office automation tools to accomplish the job.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

CO1 - Use computer system and its peripherals for given purpose

CO2 - Prepare Business document using Word Processing Tool

CO3 - Analyze Data and represent it graphically using Spreadsheet

CO4 - Prepare professional Slide Show presentations

CO5 - Use different types of Web Browsers and Apps

CO6 - Explain concept and applications of Emerging Technologies

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Sub-topics	Hrs	Marks	CO	R Level	U Level	A Level
	1	**Unit - I Introduction to Computer System** Basics of Computer System: Overview of Hardware and Software: block diagram of Computer System, Input/Output unit CPU, Control Unit, Arithmetic logic Unit (ALU), Memory Unit	02	--	1	40%	40%	20%
	2	**Word Processing** Overview of Word processor Basics, Editing a Document, Changing the Layout of a Document, Working with Tables, Working	06	--	2,3	30%	30%	40%

		with Columned Layouts and Section Breaks. **Spreadsheets** Working with Spreadsheets: Overview of workbook and worksheet, Editing Worksheet: Working with Simple Formula, Introduction to charts, overview of different types of charts, Bar, Pie, Line charts.						
SECTION - II								
Unit & Sub-Unit		**Topics/Sub-topics**						
	3	**Presentation Tool** **Creating a Presentation:** Outline of an effective presentation, Identify the elements of the User Interface, Starting a New Presentation Files, Creating a Basic Presentation, Working with textboxes, Apply Character Formats, Format Paragraphs, View a Prese Inserting Media elements: Adding and Modifying Graphical Objects to a Presentation - Insert Images into a Presentation, insert audio clips, video/animation, Add Shapes, Add Visual Styles to Text in a Presentation, Edit Graphical Objects on a Slide.	**05**	**--**	**4**	**30%**	**30%**	**40%**
	4	**Basics of Internet and Emerging Technologies** World Wide Web: Introduction, Internet,	**03**	**--**	**5**	**30%**	**30%**	**40%**

		Intranet, Cloud, Web Sites, web pages, URL, web servers, basic settings of web browsers-history, extension, default page, default search engine, creating and retrieving bookmarks, use search engines effectively for Web Services: e-Mail, Chat, Video Conferencing, e-learning, e-shopping, e-Reservation, e-Groups, Social Networking Other Aspects of Personality Development						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxanomy).								

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

V. List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
	1	Assignment Work with Computer System, Input/output devices, and peripherals. b) Work with files and folders	4	1
	2.	Assignment on Work with document files, tables, word processing and including other application	7	2
	3.	Assignment on Create, open and edit Worksheet. Charts for Visual Presentation in Spreadsheet and other applications	7	3
	4.	Assignment on Make Slide Show Presentation. Insert Animation effects to Text and Slides. b) Insert Audio and Video files in presentation	7	4
	5	Assignment on Internet connection configuration and Use Internet and Web Services.	7	5

VI. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLSDEVELOPMENT (SELF LEARNING)

Self-Learning

Following are some suggestive self-learning topics:

- Use ChatGPT/any other AI tool to explore information.
- Use Calendar toSchedule and edit activities.
- Use Translate app to translate the given content from one language to another.
- Use cloud based storage drive to store and share your files.

Assignment

- Prepare journal of practical performed in the laboratory.

Micro project

The microproject has to be industry application based, internet-based, workshop-based, laboratory-based or field-based as suggested by Teacher.

- Perform a survey on various input and output devices available in market and make its report.
- Prepare Time Table, Prepare Notes on Technical Topics, Reports, Biodata with covering letter (Subject teacher shall assign a document to be prepared by each students)
- Prepare slides with all Presentation features such as: classroom presentation, presentation about department, presentation of Technical Topics. (Subject teacher shall assign a presentation to be prepared by each student).
- Student Marksheet, Prepare Pay bills, tax statement, student's assessment record using spreadsheet. (Teacher shall assign a spreadsheet to be prepared by each student).
- Carry-out Survey on different web browsers.
- Generate resume for different job profile, survey report of any industry using ChatGPT/any other AI tool.

VII. SUGGESTED COS-POS AND COS-PSOS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	3	2	1	1	-	-	2	2	-
CO2	3	2	1	1	-	-	1	2	-
CO3	3	2	1	1	-	-	1	1	-
CO4	3	2	1	1	-	-	1	2	-
CO5	3	2	1	1	-	-	1	1	-
CO6	3	2	1	1	-	-	1	1	-
Legends :- High:03, Medium:02,Low:01, No Mapping: -									

IX. SUGGESTED LEARNING MATERIALS / BOOKS

Sr. No.	Author	Title	Publisher and Edition
1.	Goel, Anita	Computer Fundamentals	Pearson Education, New Delhi,
2.	Miller, Michael	Computer Basics Absolute Beginner's Guide, Windows 10	QUE Publishing; 8th edition August 2015

Curriculum Coordinator Head of the Department Dean Diploma

DIPLOMA PROGRAMME	**: DIPLOMA IN MECHANICAL ENGINEERING**
PROGRAMME CODE	**: DME**
SEMESTER	**: FIRST**
COURSE TITLE	**: YOGA AND STRESS MANAGEMENT**
COURSE CODE	**: 234ME17**

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	Self-learning	CR	PAPER HRS	FA-TH (MST)	SA-TH (ESE)		TOTAL		Based on LL & TL Practical				Based on Self-learning		TOTAL MARKS
											FA-PR (CA)		SA-PR (PR/OR)		SLA		
						Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
-	-	1	1	1	--	-	-	-	-	-	25	10	-	-	25	10	50

II. RATIONALE

- Diploma Graduate needs a sound body and mind to face the challenging situations in career as employee or as an entrepreneur.
- Yoga and Meditation brings about the holistic development of an individual and equips with necessary balance to handle the challenges.
- Yoga inculcates discipline in all walks of the life of student. Pranayama practice regulates breathing practices of the student to improve stamina, resilience. Meditation empowers a student to focus and keep calm to get peace of mind.
- This course for Diploma students is designed for the overall wellbeing of the student and aims to empower students to adopt and practice "Yoga" in daily life.

III. COURSE OUTCOMES (COS)

Student should be able to

CO1	Practice basic Yoga and Pranayama in daily life to maintain physical and mental fitness.
CO2	Practice meditation regularly for improving concentration and better handling of stress and anxiety.
CO3	Follow healthy diet and hygienic practices for maintaining good health.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I								
Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
	1	**Introduction to Yoga** Perform warming up exercises to prepare the body from head to toe for Yoga. **Practice Surya Namaskar** Perform all the postures of Surya Namaskar one by one in a very slow pace, after warm up.	04	--	1,2,3	40%	40%	20%
	2	**Practice basic Asanas** Perform Sarvangasna, Halasana, Kandharasana (setubandhasana) Perform Bhujangasana, Naukasana, Mandukasana. Other asanas guided by expert	04	--	1,2,3	30%	30%	40%
SECTION - II								
Unit & Sub-Unit		Topics/Sub-topics						
	3	**Practice basic pranayama** Perform Bhastrika, Anulom Vilom Pranayam Kriya Practice Kapalbhati Pranayam Kriya	04	--	1,2,3	30%	30%	40%

	4	**Practice meditation** Perform sitting in Dhyan Mudra and meditating.Start with five minute and slowly increasing to higher durations. (Trainer will explain the benefits of Meditation before practice)	04	--	1,2 ,3	30%	30%	40%
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxanomy).								

V. SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

Assignments (if any)

- Write down the assign,ents on following topic or as per teacher instruction
- Practice Surya Namaskar
- Practice basic Asanas
- Practice basic pranayama
- Practice meditation

VI. ASSESMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- Self-learning

VII. SUGGESTED COS-POS AND COS-PSOS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)	
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO- 1	PSO- 2
CO1	2	-	1	2	-	1	2	1	1
CO2	2	-	2	2	-	1	2	1	1
CO3	2	-	2	2	-	1	2	1	1
Legends :- High:03, Medium:02,Low:01, No Mapping: -									

VIII. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/WEBSITES

Sr. No.	Author	Title	Publisher and Edition
1.	Swami Vivekananda	Patanjalis Yoga Sutras	Fingerprint Publishing (2023) Prakash Books India Pvt Ltd, New Delhi
2.	Luisa Ray, Angus Sutherland	Yoga for Every Body: A beginner's guide to the practice of yoga postures, breathing exercises and me	Vital Life Books (2022)

Curriculum Coordinator Head of the Department Dean Diploma