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

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Programme Name: Diploma In Chemical Engineering

Programme Code	: DCHE	**With Effect From Academic Year**	: 2023-24
Duration of Programme	: 6 Semester	**Duration**	: 16 WEEKS
Semester	: First	**Scheme**	: R-2023

Sr No	Course Title	Abbreviation	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-PR(CA)		SA-PR (PR/OR)		SLA		
													Max	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
1	MATHEMATICS -I	MS-I	AEC	235MA11a	6	4	2	-	2	8	4	3	30	70	28	100	40	25	10	-	-	25	10	150
2	CHEMISTRY	CHEM	DSC	235CH12	4	4	-	2	2	8	4	3	30	70	28	100	40	25	10	25@	10	25	10	175
3	COMMUNICATION SKILLS	CS	AEC	235HM13	0	3	-	2	1	6	3	3	30	70	28	100	40	25	10	-	--	25	10	150
4	ENGINEERING MATERIALS	EM	DSC	235CH14	2	3	-	2	1	6	3	3	30	70	28	100	40	25	10	25@	10	25	10	175
5	FUNDAMENTLS OF COMPUTER APPLICATIONS	FCA	SEC	235CH15	0	1	-	2	1	4	2							25	10	25@	10	25	10	75
6	ENGINEERING GRAPHICS	EG	DSC	235CH16		2	-	4		6	3		-	-		-	-	50	20	50@	20	--	--	100
7	YOGA AND STRESS MANAGEMENT	YSM	VEC	235CH17	1	-	-	1	1	2	1		-	-		-	-	25	10	--	--	25	10	50
Total					13	17	2	13	8	40	20		120	280		400		200		125		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./Apprenti./Project./Community (INP) : 0, Ability Enhancement Course (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

Curriculum Coordinator

Head of the Diploma Chemical Engineering (DCHE)

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

Dean Diploma

I DCHE

DIPLOMA PROGRAMME	: DIPLOMA IN CHEMICAL ENGINEERING
PROGRAMME CODE	: DCHE
SEMESTER	: FIRST
COURSE TITLE	: MATHEMATICS – I (MS-I)
COURSE CODE	: 235MA11a

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	SL	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

Total IKS Hrs for Sem: 6 Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SL- Self 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) : 3, 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

II. RATIONALE

1. To teach students basic facts, concepts and principles of mathematics as a tool to analyze engineering problems.
2. 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/Sub-topics	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**	7	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**	7	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/Sub-topics	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**	**14**	**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 formulae	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. 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.

VII. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

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

Summative Assessment (Assessment of Learning)

- End Semester Examination.

VIII. SUGGESTED COS-POS 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	1	1	-	-	1	1	1
CO2	2	1	1	1	-	-	1	1	1
CO3	2	1	1	1	-	-	1	1	1
CO4	2	1	1	1	-	-	1	1	1

Legends :- High:03, Medium:02,Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the chemical industry.
PSO2: Understand the impact of chemical processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

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
4	Garima Singh	Mathematics-II	Khanna Book Publishing Co. (P) Ltd. ISBN: 978-93-91505-52-3

X. LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	ww.onlinelibrary.wiley.com	Concepts of mathematics
2	https://iksindia.org	Indian Knowledge system

Curriculum Coordinator **Head of the Department** **Dean Diploma**

BOS VJTI Approval dated 1/8/2023

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN CHEMICAL ENGINEERING
PROGRAMME CODE	: DCHE
SEMESTER	: FIRST
COURSE TITLE	: CHEMISTRY (CHEM)
COURSE CODE	: 235CH12

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	SL	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

Total IKS Hrs for Sem. : 4 Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SL-Self 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) : 3, 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

II. RATIONALE

Chemistry is a basic science subject which is essential to all engineering courses. It gives knowledge of basic chemistry, properties, related chemical reactions for engineering applications. Due to technological progress, there are hazardous effects on the environment & human life. The core knowledge of Chemistry will bring awareness to students about the precautions & preventions to be taken to reduce the hazardous effects on environment and accidental risk. This subject will generate curiosity of carrying out further development in engineering fields.

III COURSE OUTCOMES (COS)

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

CO1 - Define concepts in Basic Chemistry
CO2 - Apply the knowledge of basic chemistry to explain concepts in solution concentration, organic Compounds and electrochemical reactions.
CO3 - Demonstrate safe and proper use of chemicals, glass wares and equipment through laboratory experiments.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	COS	R Level	U Level	A Level
1	**Atomic Structure**	10	13	1	40%	40%	20%
1.1	**Definitions of Elements, atoms, Molecules, Fundamental particles of atom,** their mass, charge, location, Definition of atomic number, atomic mass number, Isotopes and Isobars, Electronic configuration based on Hunds Rule, Aufbau's principle, Pauli's exclusion principle.						
1.2	Definitions: atomic weight, equivalent weights of an element, Molecular weight, Mole in terms of number, mass, volume, Definitions of equivalent weight and, Molecular weight of molecule.						
1.3	Determination of percentage composition of an element in a given molecule.						
2	**Solution**	08	12	2	20%	40%	40%
2.1	Solution, Concentrations of solution: Grams per litre, Percentage by weight or volume, Normality, Morality, Molality.						
2.2	Volumetric analysis, Titrations, Acid basetitration,Acidimetry, Ikalimetry, Redox titration, Iodometrictitration, Complexometric titration, Precipitation titration.						

3	**Acid, Base and Salts**	06	10	1	20%	40%	40%
3.1	**Definitions & theories of acids & bases: Classical theory,** Arrhenius theory, Lowry-Bronsted theory, Lewis theory, pH, pOH, pH scale						
3.2	Basicity of an acid and acidity of a base, Numericals of Equivalent weight of acids, bases, Definition of salts & types of salts: Normal, Acidic, Basic, Mixed, Double salts, complex salts.						

SECTION - II							
Unit & Sub-Unit	**Topics/Sub-topics**	**Hours**	**Marks**	**COS**	**R Level**	**U Level**	**A Level**
4	**Chemical reactions and Chemical Kinetics**	07	10	1	40%	40%	20%
4.1	Definition of Chemical reaction, types of chemical reaction, Rate of chemical reaction, Rate equation and rate law.						
4.2	Order of reaction, Molecularity of reaction, differential rate equations, pseudo order reactions.						
5	**Redox Reactions and Electrochemistry**	07	12	2	20%	40%	40%
5.1	Oxidation, Reduction (Electron transfer concept) Oxidising & reducing agents, Oxidation number, Numerical.						
5,2	Electrochemistry, Electrochemical reactions, Construction and working of electrolytic cell, Applications: electroplating & electrorefining						
5.3	Electrochemical cells and batteries, Construction, working of galvanic cell, Applications						
6	**Organic Chemistry**	10	13	2	40%	40%	20%
6.1	**Definitions of organic chemistry and organic compounds,** catenation, General characteristics and classification of organic compounds: on the basis of structure and functional group						

6,2	Aliphatic organic compounds: alkane, alkene and alkyene properties, chemical reactions and uses						
6.3	Aromatic organic compounds: Introduction, characteristics of aromatic compounds, Huckel rule						
6.4	Benzene its properties and reactions. Addition, Electrophilic Substitution reaction: sulphonation, nitration, halogenation						

V. LIST OF PRACTICALS/ASSIGNBMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COS
1	To study the use of indicators, for identification of acid, base and neutral solutions from the given set of solutions.	2	3
2	To standardize HCl solution using N/10 Na_2CO_3	2	3
3	To standardize $KMnO_4$ solution using N/10 $C_2H_2O_4$ solution.	2	3
4	To standardize EDTA solution using N/10 $ZnSO_4$ solution.	2	3
5	To standardize $AgNO_3$ solution using NaCl solution.	2	3
6	To Prepare anhydride derivative of dibasic acid by sublimation method.	2	3
7	To identify nature and functional group of given organic compound 1	2	3
8	To identify nature and functional group of given organic compound 2	2	3
9	To determine molecular weight of acid	2	3
10	To determine strength of acid mixture (H_2SO_4 + $H_2C_2O_4$) solution	2	3

VI. SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

- Complete electronic configuration of first 25 elements along with symbol and atomic number.
- Make a list of commercial organic and inorganic acids and bases and draw their structures.
- Prepare a report on awareness of solutions in the chemical industry.
- Enlist basic precautions in chemical laboratories

VII. ASSESMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Midterm Test Exam
- Self-learning
- Term Work

Summative Assessment (Assessment of Learning)

- End Term Exam
- Practicals

VIII. SUGGESTED COS-POS 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	1	1
CO2	3	3	2	-	1	-	1	2	1
CO3	3	3	2	-	1	-	1	2	1

Legends: - High:03, Medium:02, Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the chemical industry.
PSO2: Understand the impact of chemical processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	-	XIth standard Chemistry book	HSC Board, M.S. / NCERT
2	-	XIIth standard Chemistry book	HSC Board, M.S. / NCERT

Sr. No	Author	Title	Publisher
3	Shashi Chawla	A Text Book of Engineering Chemistry	Educational & Technical Publishers Dhanpat Rai & Co. (Pvt.) Ltd, Edition: Third (2005)
4	Jain & Jain	Engineering Chemistry	Dhanpat Rai & Co. (Pvt.) Delhi – 110006 Ltd. Edition: (2008)

X. LEARNING WEBSITES & PORTALS

Sr.No	Link / portal	Description
1	ww.onlinelibrary.wiley.com	Concepts of basic chemistry
2	https://www.chem1.com	Chemistry instruction and education
3	https://iksindia.org	Indian Knowledge system

Curriculum Coordinator **Head of the Department** **Dean Diploma**

BOS VJTI Approval Dt. 01/08/2023

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN TEXTILE ENGINEERING
PROGRAMME CODE	: DCHE
SEMESTER	: FIRST
COURSE TITLE	: COMMUNICATION SKILLS (CS)
COURSE CODE	: 235HM13

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	SL	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	3	30	70	28	100	40	25	10	-	-	25	10	150

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

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

Course Category: Discipline Specific Course Core (DSC) : 3, Discipline Specific Elective (DSE) : 0, Val Education Course (VEC) : 1, Intern/Apprentice/Project/Community (INP) : 0, Ability Enhancement Cour (AEC) : 2, Skill Enhancement Course (SEC) : 2, Generic Elective (GE) : 0

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**.

a) In order to develop the writing abilities of students, some textbooks that give exposure to language have been introduced.
b) The tutorials have been incorporated to provide practice to the students to develop writing skills.
c) Vocabulary exercises are given to enhance word power while writing.
d) Grammar topics are taught by giving sufficient practice material to help them formulate grammatically correct sentences.
e) 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	**Emanating Voices- textbook1**	6	10	3	30%	50%	20%
1.1	The Mother of a Traitor- Maxim Gorky						
1.2	Speeches at the world's Parliament of Religions- Swami Vivekananda						
1.3	Appro JRD -Sudha Murty						
2	**Igniting Minds- textbook II**	4	8	3	40%	40%	20%
2.1	What teenagers Need to Know about Cybersecurity- Sanjay Goyel						
2.2	India What can it teach us? -Max Muller						
3	**Written and spoken communication in English**	14	17	1	40%	40%	20%
3.1	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 • Critical Analysis • Powerpoint presentation based on texts as well as drawing parallels from industry						
3.2	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						

SECTION - II							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	COS	R Level	U Level	A Level
4	**Comprehension-**	10	20	2	20%	40%	40%
4.1	Short composition, Paragraph writing, Coherence, Correct grammar Good vocabulary, Creative Writing Proper structure, Description of an object or a product or a situation. - use of technical words development of ideas developing a story/ poetry/ paragraph						
4.2	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			2			
4.3	Vocabulary Building a) Synonyms b) Antonyms c) Homophones d) One-word substitute e) Homonyms			1			
5	**Application of grammar**	**10**	**05**	**1**	**40%**	**40%**	**20%**
5.1	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						
6	**Use of refined language**	**4**	**10**	**2**	**40%**	**40%**	**20%**
6.1	a) Idioms. b) Proverbs c) Phrases d) Quotations						

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	2
8	Idioms	2	3
9	Email Etiquette	2	3
10	Proverbs	2	2
11	Sentence structure	2	3
12	Correction of Errors (grammatical)	2	1

VI. ASSESSMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

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

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)

Summative Assessment (Assessment of Learning)

- End Term Exam
- Tutorial Performance

VII. SUGGESTED COS-POS 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	-	3	2	2	2	2
CO2	1	1	1	-	3	2	2	2	2
CO3	1	1	1	-	3	2	2	2	2

Legends :- High:03, Medium:02,Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the chemical industry.

PSO2: Understand the impact of chemical processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

VIII. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFERENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
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 Sardeshpande, Narayan Mehare, Subhashree Mukherjee	Igniting Minds (Book II)	Orient Black Swan. First edition. 2021

IX . LEARNING WEBSITES & PORTALS

Sr. No	Link / Portal	Description
1	https://www.britishcouncil.in/english/learn-online	The website link is given to refer to Unit I
2	Vocabulary.com	Refer to this website for interactive vocabulary quizzes, word lists
3	International Phonetic Association (IPA) Website	It offers audio examples and charts to help understand and transcribe sounds
4	grammarly.com/blog	For constructing effective paragraphs and improving clarity
5	www.newagegolden.com	Refer to this website for speech writing, diary entry, and paragraph writing

Curriculum Coordinator **Head of the Department** **Dean Diploma**

BOS VJTI Approval dated 1/8/2023

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	: **DIPLOMA IN CHEMICAL ENGINEERING**
PROGRAMME CODE	: **DCHE**
SEMESTER	: **FIRST**
COURSE TITLE	: **ENGINEERING MATERIALS (EM)**
COURSE CODE	: **235CH14**

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	SL	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	3	30	70	28	100	40	25	10	25@	10	25	10	175

Total IKS Hrs for Sem: 2 Hrs

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SL- Self 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) : 3, 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

II. RATIONALE:

The knowledge for the utilization of water resources and fundamentals of corrosion resistance is important in troubleshooting of the problems related to hard water and material corrosion. Understanding of properties of helps in selecting appropriate materials such as alloys, lubricant, polymers and fuels for engineering applications.

III. COURSE OUTCOMES (COS)

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

CO1 - Understand and apply the chemistry of water and corrosion to trouble shoot problems in engineering.

CO 2 - Explain composition, properties and applications of engineering materials alloys, lubricant, polymers and fuels

CO 3 - Demonstrate safe and proper use of chemicals, glass wares and equipment's through laboratory experiment.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION-I								
Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	COS	R Level	U Level	A Level
1		**Alloys**	6	10	2	20%	40%	40%
	1.1	Defination, purpose of alloy, Preparation methods, types: Ferrous & Non Ferrous alloy, Ferrous alloy: Steel, Alloy steel, Composition, Properties and uses						
	1.2	Non Ferrous alloy: Alloy of Cu, Zn, Al, Sn, Pb Composition, Properties and uses						
2		**Water**	10	15	1	20%	60%	20%
	2.1	Introduction, Hard and soft water and its comparison, hardness, temporay hardness, permanent hardbess and its comparison and total hardness, $CaCO_3$ equivalent hardness, units of hardness,						
	2.2	Numericals on hardness, hardness determination (EDTA method only), Disadvantages of use of hard water, Scales and sludges and its comparison, Hard water treatment methods: Lime – Soda process.						
	2.3	Zeolite Permutit method, Ion exchange method, Disinfection methods, Desalination of sea water by reverse osmosis						
3		**Lubricants**	8	10	2	20%	60%	20%
	3.1	Lubricant, Lubrication, Function of lubricant, Types of lubricants, Mechanisms of lubrication,						
	3.2	Ideal lubricant and properties: Viscosity, Viscosity index, fire point, flash point, pour point, cloud point, Saponification value, Acid value.						

SECTION - II							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	COS	R Level	U Level	A Level
4	**Polymers**	07	10	1	20%	60%	20%
4.1	Polymer, Monomer, classification of polymers, Polymerisation, Addition and condensation polymerisation						
4.2	Plastics: definition, types: thermosetting & thermo softening plastics and its comparison, compounding of plastics, properties and applications of plastics,						
4.3	Rubber, structure of rubber, Natural rubber: preparation & properties, Vulcanization of rubber, properties of vulcanized rubber, synthetic rubber & its comparison with natural rubber. Properties and applications of rubbers						
5	**Fuels**	07	12	2	40%	40%	20%
5.1	Definition of fuel, Ignition temperature and calorific value, characteristics of ideal fuels, and Classification of fuels, their advantages and disadvantages, Solid Fuels: Coals, types, Proximate and ultimate analysis of coal and their significance, Numericals on Proximate analysis						
5.2	Liquid Fuels: Petroleum: its chemical composition and fractional distillation, Composition, properties and uses of petrol, diesel, kerosene, Gaseous Fuels: Composition, properties and uses Natural, coal gas, LPG						
6	**Corrosion**	10	13	2	20%	60%	20%
6.1	Introduction, Types of corrosion (dry and wet corrosion), types of Atmospheric and mechanism of corrosion due to oxidation, oxide films,						
6,2	Electrochemical series of metals, electrochemical corrosion, mechanism of electrochemical corrosion, types of electrochemical corrosion: galvanic corrosion and concentration cell corrosion, pitting corrosion, factors affecting corrosion						
6.3	Protective measures against corrosion: coatings (galvanic and zinc, organic coating, Electroplating, metal cladding,).						

V. LIST OF PRACTICALS/ASSIGNBMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COS
1	To estimate the amount of iron in plain carbon steel alloy.	2	3
2	To estimate of hardness of water by EDTA complexometric titration.	2	3
3	To estimate amount of chloride in tap water by Mohr's Method	2	3
4	To determine saponification value of given oil.	2	3
5	To determine acid value of given lubricating oil.	2	3
6	To determine relative viscosity of given oil.	2	3
7	To determine flash point value of given lubricating oil using Able's apparatus.	2	3
8	To determine flash point value of kerosene using Penksy Martin's apparatus.	2	3
9	To estimate the amount of zinc in brass alloy	2	3
10	To estimate the amount of copper in brass alloy	2	3

VI. SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

- Report on Manufacturing methods of steel in India
- Specifications of drinking potable water and methods of treatment for drinking potable water.
- Comparison between electric vehicles and petroleum-based fuels.
- Advantages of use of polymers and lubricants

VII. ASSESMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Midterm Test Exam
- Self-learning
- Term Work

Summative Assessment (Assessment of Learning)

- End Term Exam
- Practicals

VIII. SUGGESTED COS-POS 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	3	2	-	1	-	2	3	1
CO2	3	3	2	-	1	-	2	3	3
CO3	3	2	3	-	2	-	2	3	2

Legends: - High:03, Medium:02, Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the chemical industry.
PSO2: Understand the impact of chemical processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/WEBSITES

No	Author	Title	Publisher
1	-	XIth standard Chemistry book	HSC Board, M.S. / NCERT
2	-	XIIth standard Chemistry book	HSC Board, M.S. / NCERT
3	Shashi Chawla	A Text Book of Engineering Chemistry	Educational & Technical Publishers Dhanpat Rai & Co. (Pvt.) Ltd. Edition: Third (2005)
4	Jain & Jain	Engineering Chemistry	Dhanpat Rai & Co. (Pvt.) Delhi – 110006 Ltd. Edition: (2008)

X. LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	ww.onlinelibrary.wiley.com	Concepts of basic chemistry
2	https://www.chem1.com	Chemistry instruction and education
3	https://iksindia.org	Indian Knowledge system

Curriculum Coordinator **Head of the Department** **Dean Diploma**

BOS VJTI Approval Dt. 01/08/2023

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN CHEMICAL ENGINEERING
PROGRAMME CODE	: DCHE
SEMESTER	: FIRST
COURSE TITLE	: FUNDAMENTAL OF COMPUTER APPLICATIONS (FCA)
COURSE CODE	: 235CH15

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	SL	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	-	2	1	2	-	-	-	-	-	-	25	10	25@	10	25	10	75

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SL-Self 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) : 3, 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

II. RATIONAL

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 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. 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.

III. COURSE OUTCOMES (COS)

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

CO1 - Acquire basic knowledge about basic operating system and nomenclature.

CO2 - Demonstrate the use of word processing, MS excel, PowerPoint related software and various short keys used.

CO3 - Apply the basic of C programming.

IV. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION - I							
Unit & Sub-Unit	**Topics/Sub-topics**	**Hours**	**Marks**	**COS**	**R Level**	**U Level**	**A Level**
1	**Operating System**	2		1	0 %	0 %	0 %
1.1	Window desktop, start menu, driver folder, my computer, control panel						
1.2	Types of files like data files, image files, audio files and their extensions						
2	**Word processing**	3		2	0 %	0 %	0 %
2.1	Various commands like cut, copy and paste						
2.2	Creating document and editing a document, PDF files						
2.3	Acrobat Reader and Adobe page maker system utilities like Win zip and Antivirus programs						
3	**Spread Sheets**	2		2	0 %	0 %	0 %
3.1	MS Excel, concept of worksheet, graphs						
3.2	Mathematical and other functions						

SECTION – II							
Unit & Sub-Unit	**Topics/Sub-topics**	**Hours**	**Marks**	**COS**	**R Level**	**U Level**	**A Level**
4	**Presentation Software**	2		2	0 %	0 %	0 %
4.1	MS Power point- Basic concept						
4.2	Slide shows animation effect and background						
5	**Data Based Management**	2		2	0 %	0 %	0 %
5.1	MS Access						
5.2	Creating Data based object like table, forms, queries and report						
6	**Basic of C Program**	3		3	0 %	0 %	0 %
6.1	Simple C program with basic input, output statements						
6.2	Use of If, while and For statement						

V. LIST OF PRACTICALS/ASSIGNBMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COS
1	Create the BIO-DATA form	2	2
2	Use smart art and create organization charts using MS word	2	2
3	Make books content page or index page using MS word	2	2
4	Create Mathematical Formulas using MS word	2	2
5	Use of Formulas Sum, Average, If, Count, Counta, Countif & Sumif	2	2
6	Create Pi chart, Line or Area Chart, Bar chart and 3D chart using given data	2	2
7	Create PPT for given data	2	2
8	Use the Drawing tools to create the picture shown.	2	2
9	C Basic Input Output statement for chemical engineering problems	2	3
10	Use of If, while and For statement for chemical engineering problems	2	3
* Minimum 8 and maximum 12 practical/experiment sessions to be included in a course in a term.			

VI. SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

Self-Learning

Following are some suggestive self-learning topics:

- Use smart art and create organization charts using MS word
- Use ChatGPT/any other AI tool to explore information.
- Use Calendar to Schedule 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.

Assignments

- Prepare journal of practical performed in the laboratory.

Micro Project (if any)

- 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 student)
- 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 spread sheet 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. ASSESMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Lab performance, Assignment, Self-learning and Seminar/Presentation

Summative Assessment (Assessment of Learning)

- Lab. Performance, viva voce

VIII. SUGGESTED COS-POS 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	3	-	-	2	1	1
CO2	1	-	2	3	-	-	2	2	2
CO3	1	-	2	3	-	-	2	2	2

Legends: - High:03, Medium:02, Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the chemical industry.

PSO2: Understand the impact of chemical processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	Goel, Anita	Computer Fundamentals	Pearson Education, New Delhi, 2014, ISBN-13:978-8131733097
2	Miller, Michael	Computer Basics Absolute Beginner's Guide, Windows 10	QUE Publishing; 8th edition August 2015, ISBN:978-0789754516

Sr. No	Author	Title	Publisher
3	Alvaro, Felix	Linux: Easy Linux for Beginners	Create vSpace Independent Publishing Platform-2016, ISBN-13: 978-1533683731
4	Johnson. Steve	Microsoft Office 2010: On Demand	Pearson Education, New Delhi India. 2010. ISBN:9788131770641
5	Schwartz, Steve	Microsoft Office 2010 for Windows: Visual Quick Start	Pearson Education, New Delhi India, 2012, ISBN :9788131766613
6	Leete, Gurdy, Finkelstein Ellen, Mary Leete	OpenOffice.org for Dummies	Wiley Publishing, New Delhi, 2003 ISBN: 978-0764542220

Curriculum Coordinator **Head of the Department** **Dean Diploma**

BOS VJTI Approval Dt. 01/08/2023

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN CHEMICAL ENGINEERING
PROGRAMME CODE	: DCHEM
SEMESTER	: FIRST
COURSE TITLE	: ENGINEERING GRAPHICS (EG)
COURSE CODE	: 235CH16

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	SL	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	-	-	-	-	-	-	50	20	50@	20	-	-	100

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

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

Course Category: Discipline Specific Course Core (DSC) : 3, 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

II. COURSE OUTCOMES (COS)

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

CO1- To understand geometry of shapes, drawing conventions, definitions and drawing procedures.

CO2 - Apply principles of orthographic projections for drawing, from given pictorial views.

CO3 - Draw isometric views of given component or from orthographic projections.

CO4- Understanding full sectional views and rules for section/hatching lines.

CO5- Understand drafting software & able to draw basic AutoCAD 2D drawings using AutoCAD commands.

III. COURSE CONTENTS WITH SPECIFICATION TABLE

SECTION – I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	COS	R Level	U Level	A Level
1	**BASIC ELEMENTS OF DRAWING –** Drawing Instruments and supporting material: method to use them with applications. Standard sizes of drawing sheets. Letters and numbers (single stroke vertical). Convention of lines and their applications. Scale - reduced, enlarged & full size. Dimensioning types – Aligned & Unidirectional	04	-	1	30	30	40
2	**ORTHOGRAPHIC PROJECTIONS –** Introduction to orthographic projection, First angle and Third angle method of projection, their symbols. Conversion of pictorial view into Orthographic Views — object containing plain surfaces, slanting surfaces, slots, ribs, cylindrical surfaces. (use First Angle Projections only)	08	15	2	40	30	30
3	**ISOMETRIC PROJECTIONS & VIEWS –** Introduction to Isometric projection. Isometric scale and Natural Scale. Isometric view and isometric projection. Illustrative problems related to simple objects having plain, slanting, cylindrical surfaces and slots on slanting surfaces. Conversion of orthographic views into isometric view/projection.	08	10	3	40	30	30

SECTION - II							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
4	**SECTIONAL ORTHOGRAPHIC PROJECTIONS –** Sectional orthographic projections of simple machine parts. Full Section & half section. Sectioning conventions	08	20	4	40	30	30

	for Ribs/webs, shafts, pins, nuts, bolts, washers, keys, rivets, etc. Rules for section/hatching lines, cutting plane lines.						
5	**COMPUTER AIDED DRAFTING** Demonstration & practice of drafting software to students. Introduction, AUTO CAD commands, different toolbars, Dimensioning, Plotting, etc.	04	05	5	40	30	30

IV. LIST OF PRACTICALS/ASSIGNBMENTS/TUTORIALS

Unit no.	Practical/Assignment	Approx. Hours	COS
1	One sheet on lettering & types of lines	04	1
2	Four/five sheets on Orthographic Projections	14	2
3	Four/five sheets on the Isometric Views.	14	3
4	Four/five sheets on Sectional Orthographic Projections.	14	4
5	Demonstration & practice of Auto CAD Drafting software.	04	5

Note - The students should workout & practice the problems on the above topics preferably on, A3 size drawing sketchbook & term work sheets should work out on quarter imperial drawing sheets during the practical.

V. ASSESMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Midterm Test Exam
- Self-learning
- Term Work

Summative Assessment (Assessment of Learning)

- End Term Exam
- Practicals

VI. SUGGESTED COS-POS 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	-	2	-	-	1
CO2	3	-	-	2	-	2	-	-	1
CO3	3	-	-	2	-	2	-	-	1
CO4	3	-	-	2	-	2	-	-	1
CO5	3	-	-	2	-	2	-	-	1

Legends :- High:03, Medium:02,Low:01, No Mapping: -

PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the chemical industry.

PSO2: Understand the impact of chemical processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

VII. 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 Publications, Edition -2014/1
3	D. A. Jolhe	Engineering Drawing	TATA McGraw Hill- 2008
4	K. R. Mohan	Engineering Graphics	Dhanpatrai Publishing Co. 1st Edition-2009
5	P. J. Shah	Engineering Drawing	S Chand Publication, Rev. edition 2013.

Curriculum Coordinator **Head of Department** **Dean Diploma**

BOS VJTI Approval Dt. 01/08/2023

VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE DIP EXAM MATUNGA MUMBAI-19

DIPLOMA PROGRAMME	: DIPLOMA IN CHEMICAL ENGINEERING
PROGRAMME CODE	: DCHE
SEMESTER	: FIRST
COURSE TITLE	: YOGA AND STRESS MANAGEMENT (YSM)
COURSE CODE	: 235CH17

I. TEACHING AND EXAMINATION SCHEME

TEACHING SCHEME					EXAMINATION SCHEME												
CL	TL	LL	SL	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

Total IKS Hrs for Sem. : 1 Hr

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SL-Self 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) : 3, 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

II. RATIONAL

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. The age of a polytechnic student is appropriate to get introduced to yoga practice as this will help them in studies as well as his professional life. Moreover, Yoga inculcates discipline in all walks of the life of students. Pranayama practice regulates breathing practices of the student to improve stamina, resilience. Meditation and Stress Management empowers a student to focus and keep calm to get peace of mind. The World Health Organization (WHO) has also emphasized the role of yoga and meditation as stress prevention measures. National Education Policy -2020

highlights the importance of yoga and stress management amongst students of all ages. Therefore, 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)

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

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 a 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	COS	R Level	U Level	A Level

SECTION – II							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level

V. LIST OF PRACTICALS/ASSIGNBMENTS/TUTORIALS

Sr. No.	Practical/Assignment/Tutorial Title	No. of Hours	Relevant COS
1	Presentations on Introduction to Yoga and its History. Perform warming up exercises to prepare the body from head to toe for Yoga.	5	1
2	Perform all the postures of Surya Namaskar one by one in a very slow pace, after warming up.	4	1
3	Perform multiple Surya Namaskar (Starting with three and gradually increasing it to twelve) in one go.	3	1
4	Perform Sarvangasana, Halasana, Kandharasana (setubandhasana)	2	1
5	Perform Bhujangasana, Naukasana, Mandukasana	2	1
6	Perform Paschimottanasana, Baddhakonasana, Bharadwajasana.	2	1
7	Perform Virabhadrasana, Vrikshasana, Trikonasana. Follow up experiment 5 to 7 with savasana for self-relaxation.	2	1
8	Perform Bhastrika, Anulom Vilom Pranayam Kriya	2	2
9	Practice Kapalbhati Pranayam Kriya	2	2
10	Practice Bhramari Pranayam.	1	2

11	Perform sitting in Dhyan Mudra and meditating. Start with five minutes and slowly increase to higher durations. (Trainer will explain the benefits of Meditation before practice)	5	2

* Minimum 8 and maximum 12 practical/experiment sessions to be included in a course in a term.

Note:

1. Start and end of each session can be with appropriate Yoga prayers and chanting of Omkar.
2. Trainers can add similar asanas in practical sessions.
3. Students are to be instructed to practice the experiment performed at least twice a week as part of self-learning practices.
4. Live demonstration by the trainer needs to be carried out during practical hours. Yogic Videos can be used as well.

VI. SUGGESTED SELF LEARNING ASSIGNMENTS/MICROPROJECT/ACTIVITIES

Self-Learning

Following are some suggestive self-learning topics:

- Perform the asanas with relative ease.
- Implement the suggestions given in literature to improve and maintain one's health.
- Carefully perform the yoga practices shown in the videos.
- Observe the daily improvements in oneself and correct the posture each time to achieve perfection.

Assignments

- Implement the diet plan to improve one's health.
- Prepare Diet and nutrition chart for self.

Micro Project (if any)

- Practice at least thrice a week.
- Read books on different methods to maintain health, wellness and to enhance mood.
- Watch videos on Yoga Practices.
- Maintain a diary indicating date wise practice done by the student with a photograph of self in yogic posture.

VII. ASSESMENTS METHODOLOGIES /TOOLS

Formative assessment (Assessment for Learning)

- Lab performance
- Self-learning
- Terms work

Summative Assessment (Assessment of Learning)

- Actual Practical Performance

VIII. SUGGESTED COS-POS 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	-	3
CO2	-	-	-	-	-	-	3	-	3
CO3	-	-	-	-	-	-	3	-	3

Legends: - High: 03, Medium: 02, Low: 01, No Mapping: -
PSO1: Ability to apply knowledge of selecting raw materials, machines and process parameters using standard methods and engineering tools for designing solutions to meet specific needs of the chemical industry.
PSO2: Understand the impact of chemical processes in societal and environmental context and demonstrate the knowledge for sustainable development through teamwork and effective communication for lifelong learning.

IX. SUGGESTED LEARNING MATERIALS TEXTBOOKS/REFRENCE BOOKS/WEBSITES

Sr. No	Author	Title	Publisher
1	Swami Vivekananda	Patanjali's Yoga Sutras	Fingerprint Publishing (2023) Prakash Books India Pvt Ltd, New Delhi ISBN- 13:978- 9354407017
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) ISBN-13978-1739737009
3	Swami Saradananda	Mudras for Modern Living: 49 inspiring cards to boost your health, enhance your yoga.	Watkins Publishing (2019) ISBN-13:978-1786782786
4	Martha Davis, Elizabeth Robbins, Matthew McKay, Eshelman MSW	The Relaxation and Stress Reduction Workbook	A New Harbinger Self-Help Workbook (2019)
5	Ann Swanson	Science of Yoga: Understand the Anatomy	ISBN-13: 978-1465479358

		and Physiology to Perfect Your Practice	

X. LEARNING WEBSITES & PORTALS

Sr. No	Link / Portal	Description
1	https://onlinecourses.swayam2.ac.in/aic19_ed28/preview-introduction to Yoga and Applications of Yog	Yoga and Applications of Yoga
2	https://onlinecourses.swayam2.ac.in/aic23_ge09/preview	Yoga for Creativity
3	https://onlinecourses.swayam2.ac.in/aic23_ge05/preview	Yoga for concentration
4	https://onlinecourses.swayam2.ac.in/aic23_ge06/preview	Yoga for memory development
5	https://onlinecourses.nptel.ac.in/noc21_hs29/preview	Psychology of Stress, Health and Well-being
6	https://onlinecourses.swayam2.ac.in/nce19_sc04/preview	Food Nutrition for Healthy Living - Course – Swayam
7	https://www.classcentral.com/course/swayam-fitness-management-	Fitness Management from Swayam

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