# COURSE STRUCTURE

# AND

# SYLLABUS FOR

# DIPLOMA PROGRAMMES

## 1st year (Semester I)

## (APPLICABLE FROM AY 2024-2025 ONWARDS)

**CENTRAL INSTITUTE OF TECHNOLOGY KOKRAJHAR**

# COURSE STRUCTURE
# DIPLOMA PROGRAMMES
## 1st year
## Semester I

| Sl. No. | Course Code | Course Name | L | T | P | C |
|---|---|---|---|---|---|---|
| 01. | DMA101 | Mathematics I | 2 | 1 | 0 | 3 |
| 02. | DPH101 | Applied Physics I | 2 | 1 | 0 | 3 |
| 03. | DCH101 | Applied Chemistry | 2 | 1 | 0 | 3 |
| 04. | DHS101 | Communication in English | 2 | 0 | 2 | 3 |
| 05. | DME171 | Engineering Workshop Practice | 0 | 0 | 4 | 2 |
| 06. | DME172 | Engineering Graphics | 0 | 0 | 2 | 1 |
| 07. | DPH171 | Applied Physics I lab | 0 | 0 | 2 | 1 |
| 08. | DCH171 | Applied Chemistry lab | 0 | 0 | 2 | 1 |
| 09. | DHS172 | Sports and Yoga | 0 | 0 | 2 | 1 |
| | **Contact Hours: 34** | | **8** | **3** | **14** | **18** |

| Legends: | |
|---|---|
| **L** | Lecture |
| **T** | Theory |
| **P** | Practical |
| **C** | Credits |

**Course Code: DMA101**
**Course Title: Mathematics-I**
**Number of Credits: 03 (L:02; T:01; P:0)**

**Course Objectives**:

The course is designed to give students entering diploma in engineering, a sufficient coverage to the subject of trigonometry, introduction to differential calculus and some basic elements of algebra. Care has been taken not to repeat topics that the students have covered in the general mathematics subject of Class-X.

**Course Contents**:

**Unit-I: Trigonometry (6 hours)**

Measurement of angle in degrees, grades and radians and conversion from one to the other form. Trigonometric ratios of allied angles (no proof), sum, difference formulae and applications (no proof). Product formulae, transformation of product to sum, difference and vice versa. Trigonometric ratios of multiple and sub-multiple angles. Graphs of sin x, cos x and tan x.

**Unit-II**: **Differential Calculus (6 hours)**

Definition of function; Concepts of limits. Basic standard limits (no proof) and their use in examples. Differentiation by definition of $x^n$, sin x, cos x, tan x, $e^x$ and $\log_a x$. Differentiation of sum, product and quotient of functions.

**Unit-III: Algebra (20 hours)**

**Complex Numbers**: Definition. Addition, subtraction and multiplication of complex numbers, representation in the complex or Argand plane, conjugate of a complex number, division of complex numbers, modulus and amplitude or argument of a complex number and representation of a complex number in polar form and conversion from cartesian to polar form. De-Moivre's theorem and its applications.

**Partial Fractions**: Definition of proper, improper and partial fractions. Resolution of proper fraction into partial fraction with denominator containing non-repeated linear factors, repeated linear factors, and irreducible non-repeated quadratic factors. Resolution of improper fraction into partial fraction.

**Permutation and Combination**: Values of ${}^nP_r$ and ${}^nC_r$ and their applications.

**Binomial Theorem**: Binomial theorem for positive integral index (no proof), expansion and general form; binomial theorem for any index (no proof) first and second binomial approximation with applications to engineering problems.

**Text Book:**

Mathematics Textbook For Class XI, 2019 edition, Publisher: Pushtak

Mathematics Textbook For Class XII Part I + Part II, 2019 edition, Publisher: NCERT

**References**:

1. H.K. Dass, Engineering Mathematics, S. Chand, New Delhi
2. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, New Delhi
3. Reena Garg, Engineering Mathematics, Khanna Publishing House, New Delhi

**Course title: Applied Physics I (Theory)**
**Course code: DPH101**
**Category: Basic Science Course**
**Total Contact hours: 34** **Credit: L-T-P: 2-1-0**

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## MODULE 1: UNITS & DIMENSION (2 L)

Different system of units (CGS and SI), fundamental and derived quantities, dimensions of physical quantities, dimensional equations of physical quantities and its application.

## MODULE 2: BASIC MECHANICS (12 L)

2.1 Introduction to scalar and vector quantities, representation of vector, addition, subtraction and multiplication of vectors, parallelogram law of vector addition, resolution of vector, dot and cross product of two vectors.

2.2 Newton's laws of motion: First law, explanation, definition of force, Concept of Inertia, types of inertia, Newton's second law, momentum, impulse, mass & weight, simple problems, Third law, explanation and its examples, Principle of conservation of linear momentum, statement and simple examples (e.g. recoil of a gun), numerical problems.

2.3 Circular motion, time period and angular velocity, relation between angular velocity and linear velocity, centripetal and centrifugal force, bending of a cyclist on a curved path, banking of roads and railway track, numerical problems.

2.4 Work, power and energy, Potential and Kinetic energy, Law of conservation of energy and its application for a free falling body, numerical problems.

2.5 Simple Harmonic Motion, definition of amplitude, time period, frequency, phase, simple pendulum & second's pendulum, numerical problems.

## MODULE 3: GRAVITY AND GRAVITATION (3 L)

Newton's law of gravitation, acceleration due to gravity, relation between 'G' and 'g', variation of the value of g with altitude and depth, Centre of gravity and Centre of mass, Numerical problems

**MODULE 4: ELASTIC PROPERTIES OF SOLID (3 L)**

Deforming force, restoring force, Elastic and plastic bodies, explanation of stress and strain with their types, Hook's law, elastic limit, Young's modulus, Bulk modulus, Rigidity modulus, Poisson's ratio, their units and numerical problems.

**MODULE 5: HEAT & RADIATIONS (10 L)**

5.1. Unit of heat, Specific heat, Thermal capacity and Water equivalent.

5.2. Concept of heat and temperature, different scales of temperatures and their conversion formulae, numerical problems.

5.3. Thermal expansion: expansion of solid, linear, superficial and cubical expansion of solid, their relations among different coefficients.

5.4. Change of state, melting and freezing point, effect of pressure on melting point, latent heat, evaporation, difference between vaporisation and evaporation.

5.5. Transmission of heat, three modes of heat transfer, conduction, convection and radiation, good and bad conductor of heat, coefficient of thermal conductivity.

5.6. Radiation of heat, Stephane Law, Newton Law of cooling.

**MODULE 6: SOUND (4 L)**

6.1. Different types of wave motion and their characteristics.

6.2. Propagation of sound wave in air, Newton's formula and Laplace's correction, Effect of temperature, and pressure on velocity of sound.

6.3. Doppler's effect with mathematical expression.

**Suggested Reference Books:**


1. Modern Approach to Physics Part I & II, Dilip Sarma, N G Chakraborty, and K N Sharma, Kalyani Publisher, New Delhi.

2. Applied Physics Part I & II, Manpreet Singh, Dr. Major Singh, and Mrs. Hitashi Gupta, S K Kataria & Sons- New Delhi.

3. Basic Applied Physics, R K Gaur, Dhanpat Rai Publication- New Delhi.

**Paper code: DCH101**

**Paper name: Applied Chemistry** **Credit:**

**Total contact hours: 36** **L-T-P: 2-1-0**

**Unit I: Periodic table, Atomic structure**

(4L)

Electrons, protons, neutron, Atomic mass (A), atomic number (Z) isotopes, isobars, isotone, orbit and orbitals, electronic configuration (upto Z=30). Modern periodic table, groups and periods.

**Unit II: Electrochemistry**

(4L)

Electrolytes, Faraday's law of electrolysis, Numerical problems, application of electrolysis, oxidation and reductions, Redox reactions.

**Unit III: Metallurgy** (4L)

General principles of metallurgy, minerals, ore, gangue, slag, flux, roasting, calcination etc. Metallurgy of iron and alluminium, Manufacture of steel by Bessemer process, open hearth process and LD process, alloys.

**Unit IV:Buliding materials** (3L)

Portland cement, Types of manufacturing, setting and hardening of cement, special cement. Glass, Bricks.

**Unit V: Lubricant** (3L)

Defination, classification of lubricants, important functions of lubricants.

**Unit VI: Polymer and polymerization** (4L)

Types of polymer, thermoplastic and thermosetting plastic, preparation and applications of PE, PVC, PP, Perpex, Teflon, Bakelite, nylon, Natural rubber, Synthetic rubber.

**Unit VII: Organic chemistry** (6L)

IUPAC nomenclature, Alkane, alkene, alkyne, alcohol synthesis and applications.

**Unit VIII: Environmental Chemistry** (4L)

Defination, Types of pollution, pollutants, Water quality measurements- D.O, B.O.D, C.O.D, hardness of water, removal of hardness, TDS, Green house effect, acid rain, Ozone layer depletion.

**Unit IX: Industrial chemistry** (4L)

Ethanol manufacture from starch by fermentation, Fuels- Classifications, calorific values, natural gas, water gas, producer gas, LPG, power alcohol. Petroleum- refining, octane number, cetane number.

**Texts-Books / References:**


1. S. Chawla;*A Text Book of Engineering Chemistry*, DhanpatRai Publishing Co.
2. Jain and Jain;*Engineering Chemistry*, DhanpatRai Publishing Co.

3. 3.V.R. Gowariker, N.V. Viswanathan, J. Sreedhar, *PolymerScience,* New AgeInternational Publisher.
4. S.K. Ghosh Advanced General OrganicChemistry (A Modern Approach) (Set I & Ii) NCBA Publisher, New Delhi, 2009
5. B. Viswanathan, P. S. Raghavan; Practical Physical Chemistry, Viva
6. 6.Dr. S. Rattan; Experiments in Applied Chemistry, S. K. Kataria& Sons.
7. J.C. Kuriacose and J. Rajaram; *Chemistry in Engineering*, Tata McGraw-Hill Publishing Company Limited, New Delhi
8. Dr. S. Rabindra and Prof. B.K. Mishra ;*Engineering Chemistry,* Kumar and Kumar Publishers (P) Ltd. Bangalore-40
9. SS Kumar; *A Text Book of Applied Chemistry-I* , Tata McGraw Hill, Delhi
10. Dr. G.H. Hugar; *Progressive Applied Chemistry –I and II* , Eagle Prakashan.
11. M. L. Sharma, P.N. Chaudhury, B. R, Khanal, D.R.Paudel; *Engineering Practical Chemistry*, Ekta Books Distributors.

**Course Code: DHS101**
**Course Title: Communication in English**
**Credit: 3**
**L-T-P: 2-0-2**

**Course Objectives:**

1. To develop communication skills of the students i.e. listening, speaking, reading and writing skills.
2. To introduce the need for personality development- Focus will be on developing certain qualities which will aid students in handling personal and career challenges, interview skills, leadership skills etc.

**Course Content**

**Unit-1 Communication: Theory and Practice**

• Basics of communication: Introduction, meaning and definition, process of communication
• Types of communication: formal and informal, verbal, non-verbal and written barriers to effective communication.
• 7 Cs for effective communication (considerate, concrete, concise, clear, complete, correct, courteous).
• Art of Effective communication
    o Choosing words
    o Voice
    o Modulation
    o Clarity
    o Time
    o Simplification of words
• Technical Communication.

**Unit-2 Soft Skills for Professional Excellence**

• Introduction: Soft Skills and Hard Skills.
• Importance of soft skills.
• Life skills: Self-awareness and Self-analysis, adaptability, resilience, emotional intelligence and empathy etc.
• Applying soft skills across cultures.
• Case Studies.

**Unit-3: Reading Comprehension**

Comprehension, vocabulary enhancement and grammar exercises based on reading of texts.

**Unit-4: Professional Writing**

Letters: business and personnel,
Drafting e-mail, notices, minutes of a meeting, report writing
Filling-up different forms such as banks and on-line forms for placement etc.

**Unit-5: Vocabulary and Grammar**

Vocabulary of commonly used words
Glossary of administrative terms
One-word substitution, Idioms and phrases
Parts of speech, Prepositions of time and place, Subject Verb Agreement, Sentence types and Transformation of sentences, Active and passive voice, Tenses, Punctuation.

**Unit 6, 7, 8 & 9 involves interactive practice sessions in Language Lab**

**Unit-6 Listening Skills**
Listening Process and Practice: Introduction to recorded lectures, poems, interviews and speeches, listening tests.

**Unit-7 Introduction to Phonetics**
Sounds: consonant, vowel, diphthongs, etc. transcription of words (IPA), weak forms, syllable division, word stress, intonation, voice etc.

**Unit-8 Speaking Skills**
Standard and formal speech: Group discussion, oral presentations, public speaking, business presentations etc. Conversation practice and role playing, mock interviews.

**Unit-9 Business Writing and Building vocabulary**
Formal letter writing in different situations, Job application and cover letter, resume, curriculum vitae, bio data, email writing, report writing
Etymological study of words and construction of words, phrasal verbs, foreign phrases, idioms and phrases. Jargon/ Register related to organizational set up, word exercises and word games to enhance self-expression and vocabulary.

References:


1. J.D.O'Connor. Better English Pronunciation. Cambridge: Cambridge University Press, 1980.
2. Lindley Murray. An English Grammar: Comprehending Principles and Rules. London: Wilson and Sons, 1908.
3. Kulbhushan Kumar, Effective Communication Skills, Khanna Publishing House, New Delhi (Revised Edition 2018)
4. Margaret M. Maison. Examine your English. Orient Longman: New Delhi, 1964.
5. M. Ashraf Rizvi. Effective Technical Communication. Mc-Graw Hill: Delhi, 2002.
6. John Nielson. Effective Communication Skills. Xlibris, 2008.
7. Oxford Dictionary
8. Roget's Thesaurus of English Words and Phrases
9. Collin's English Dictionary
10. Daniel Jones. The Pronunciation of English. Cambridge: Cambridge University Press, 1956.
11. James Hartman& et al. Ed. English Pronouncing Dictionary. Cambridge: Cambridge University
1. Press, 2006.
12. J.Sethi & et al. A Practice Course in English Pronunciation. New Delhi: Prentice Hall, 2004.
13. Pfeiffer, William Sanborn and T.V.S Padmaja. Technical Communication: A Practical Approach. 6th ed. Delhi: Pearson, 2007.

**Paper Code: DME 171**
**Paper Name: Engineering Workshop Practice** **Credits: 02**
**Total contact hours: 36** **L-T-P: 0-0-4**

**Course Objectives:**

- To understand basic engineering processes for manufacturing and assembly
- To understand, identify, select and use various marking, measuring, holding, striking and cutting tools and equipment
- To understand and interpret the job drawings, produce and inspect the job for specified dimensions
- To understand, operate, and control different machines and equipment, adopting safety practices

**Course outcomes:**

- Acquire skills in basic engineering practice to identify, select and use various marking, measuring, and holding, striking and cutting tools & equipment and machines
- Understand job drawing and complete jobs as per specifications in the allotted time
- Inspect the job for the desired dimensions and shape
- Demonstrate the different types along with parts, working principles, mechanisms and operations of various machines such as lathe, milling, grinding, etc. and equipment, adopting safety practices

**Module 1: Carpentry shop**

1.1 Introduction to the carpentry shop
1.2 Demonstration of different woodworking tools and machines
1.3 Demonstrate different wood working processes, like planning, marking, chiselling, grooving, turning wood, etc
1.4 One simple job involving any joint like mortise and tenon, dovetail, bridle, half lap, etc

**Module 2: Fitting shop**

2.1 Introduction with the fitting shop
2.2 Demonstration of different fitting tools, drilling machines and power tools
2.3 Demonstration of different operations like chipping filing, drilling, tapping, sawing, cutting etc.
2.4 One simple fitting job involving the practice of chipping, filing, drilling, tapping, cutting, etc.

**Module 3: Welding Practice**

3.1 Introduction with the welding shop
3.2 Demonstration of different welding tools and machines
3.3 Demonstration on Arc welding, Gas Welding, MIG, and MAG welding
3.4 One simple job involving butt, lap joint etc

**Module 4: Machine shop**

4.1 Introduction with the machine shop
4.2 Demonstration of different types of lathe machines, mlling machines and shaping machines
4.3 Study of different types of hand tools and machine tools and parts
4.4 One simple job related to step turning, taper turning, threading and knurling

**Module 5: Sheet Metal Working**

5.1 Introduction with the sheet metal shop
5.2 Demonstration of different sheet metal tools/machines

5.3 Demonstration of different sheet metal operations like cutting, bending, edging, end curling, lancing, soldering, brazing, and riveting

5.4 One simple job involving sheet metal operations and soldering and riveting

**Books / References:**


1. S.K. Hajra Choudhury, A.K. Hajra Choudhury and Nirjhar Roy, Elements of Workshop Technology, Vol. I: Manufacturing Processes, Media Promotors & Publishers Pvt. Ltd., 17th Edition, 2015.
2. S.K. Hajra Choudhury and Nirjhar Roy, Elements of Workshop Technology, Vol. II: Machine Tools, Media Promotors & Publishers Pvt. Ltd, 16th Edition, 2023.
3. P.N. Rao, Manufacturing Technology, Vol. 1, McGraw Hill Education, 5th Edition, 2018.
4. P.N. Rao, Manufacturing Technology, Vol. 2, McGraw Hill Education, 4th Edition, 2018.
5. K. Venkat Reddy, Workshop Practice Manual, BS Publications, Hyderabad 2014
6. Mechanical Workshop Practice, Prentice Hall India Learning Private Limited; 2nd edition, 2010
7. H. Gerling, All About Machine Tools, New Age International, 3rd Edition, 2021

**Paper Code: DME 172**
**Paper Name: Engineering Graphics** **Credit : 01**
**Total Contact Hours: 24 Hours** **L-T-P: 0-0-2**

**Course Objectives:**

- To understand the language of graphics, which is used to express ideas and convey instructions while carrying out engineering jobs
- To develop drafting and sketching skills, to know the applications of drawing equipment, and to familiarize with the Indian Standards related to engineering drawings
- To develop skills to visualize actual objects or a part of them on the basis of drawings
- To develop skills to translate ideas into sketches and to draw and read various engineering curves, projections and dimensioning styles

**Course Outcomes:**

Following outcomes will be achieved:

- Select and construct appropriate drawing scales, use drawing equipment's, and understand Indian Standards of engineering drawing
- Draw views of given object and components
- Sketch orthographic projections into isometric projections and vice versa

**Module 1: Introduction**

1.1 Drawing as a medium of communication
1.2 Use and care of drawing instruments assignments, such as Drawing of Horizontal and Vertical Lines, Square, Rectangle, Mosaic Pattern, Angular Pattern, Stamping with circular pattern
1.3 Types of Lines and Dimensioning as per 15696/72

**Module 2: Geometrical Constructions**

2.1 Freehand curves, freehand drawing
2.2 Construction of triangles, Perpendicular and angles of 300, 450, 600, 900
2.3 Construction of Regular Polygons, Parabola, Hyperbola, Ellipse
2.4 Regular Polygons inscribed in circles
2.5 Regular figures by using T – square and Set – square

**Module 3: Lettering, Scales**

3.1 Single Stroke Lettering Straight and Inclined by graph and Free Hand Letters and digits as per 15696/72
3.2 Scale- Representative Fraction, Types or Scales
3.3 Simple Problems on Plain and Diagonal Scale

**Module 4: Projection of Points**

4.1 Position/location of Points, Horizontal plane, Vertical plane
4.2 Assignments of Simple problems on different quadrants and Find the distance between two points
4.3 Position/ Location of Points

**Module 5: Projection of Lines**

5.1 Position/location of Points, Horizontal plane, Vertical plane
5.2 Assignments of Simple problems on different quadrants and Find the distance between two points
5.3 Position/ Location of Lines

**Module 6: Orthographic Projection**

6.1 Top View, Front View and Side View of Simple objects, block and machine parts with dimensional scale
6.2 Sectional Front, Top and Side Views as per IS – 696 for simple parts and blocks

**Module 7: Rivet Heads and Joints**

7.1 Different Types of Rivet Heads and Joints
7.2 Top and Sectional Front views of Lap and Butt Joints with single, double cover plates

**Module 8: Isometric Projection**

8.1 Introduction to isometric projections
8.2 Isometric Projection to true scale and isometric scale
8.3 Illustrative problems related to objects containing lines, circles and arcs shape only

**Books / References:**


1. Dhananjoy A. Jolhe, Engineering Drawing, McGraw Hill Education; 1st edition, 2017
2. N.D. Bhatt, Engineering Drawing, Charotar Publishing House, Anand, Gujrat, 54th Edition, 2023.
3. Jain & Gautam, Engineering Graphics & Design, Khanna Publishing House, New Delhi, 2nd Edition, 2021.
4. R. K Dhawan Engineering Drawing. S. Chand and Company, New Delhi, 3rd Edition, 2019.
5. D. M. Kulkarni, A.P. Rastogi, and A.K.Sarkar, Engineering Graphics with AutoCAD. PHI Learning Private Limited-New Delhi, Revised Edition, 2009.

**Course Title: Applied Physics I (Practical)**

**Course code: DPH171**

**Category: Basic Science Course** **Credit: L-T-P: 0-0-1**

1. Vernier Calipers: To determine the volume of a metallic/wooden cube.
2. Screw Gauge: To determine cross sectional area of a wire/ thickness of a glass piece.
3. Spherometer: To determine the radius of curvature of concave and convex mirrors.
4. Simple Pendulum: To determine the value of acceleration due to gravity (g) of a place with simple pendulum.
5. Resonance Tube: To measure the velocity of sound in resonance tube.
6. Sonometer: To determine the frequency of a tuning fork using a Sonometer.
7. Nicolson Hydrometer & Hare's Apparatus: To measure the specific gravity of solid and liquid, using Nicolson hydrometer, Hare's apparatus and specific gravity bottles.
8. Boyle's Law: To determine the atmospheric pressure by using Boyle's law apparatus.
9. Calorimeter: To determine the water equivalent of a calorimeter by method of mixture.

**Course Title: Applied Chemistry lab**
**Course code: DCH171**

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**Experiment-1:** Introduction to chemistry laboratory, precautions, name of common chemicals, apparatus, instruments etc.

**Experiment-2:** Volumetric analysis and study of apparatus used therein.

**Experiment-3:** Determine the degree of temporary hardness of water by EDTA titration.

**Experiment-4:** Determination of solubility of a solid at room temperature.

**Experiment-5:** To verify the first law of electrolysis (electrolysis of copper sulphate solution using copper electrode).

**Experiment-6:** Determination of pH of unknown solutions.

**Experiment-7:** To determine the coefficient of viscosity of the alcohol by using *Ostwald's* viscometer.

**Experiment-8:** To determine the surface tension of the given liquid with respect to water at room temperature by using *Stalagnometer*.

**Experiment-9:** Preparation of standard solution of $Na_2CO_3$

**Experiment-10:** Determination of strength of NaOH by titrating with 0.1 N HCL

**Course Code :** DHS172
**Course Title :** Sports and Yoga
**Number of Credits : 0 (L: 0, T: 0, P: 2, C:1)**
**Course Category : Humanities & Social Science Courses**

| **Objectives:** |
|---|
| # Introduce Yoga therepy with its principles<br># To make aware of the therapeutic and preventive vlues of yoga;<br># To advocate health living and make society free from stress<br># Identify the needs and problems of the community and involve them in problem Solving process; |

**Course Content:**

| Module | Topics | Lecture | Tutorials | Practical | Credit |
|---|---|---|---|---|---|
| I | Fundamentals of Yoga:-<br>Definition and meanings of the term "Yoga".<br>Philosophy of yoga/ Yoga Darshan<br>Yoga in Bhagavad Gita<br>Benefits of yoga<br>Rules and regulations for practice of yoga. | 2 | 0 | 0 | 0 |
| II | History of Yoga:-<br>Vedic Period<br>Pre-classical vedic period<br>Classical period<br>Post-classical period<br>Modern period | 2 | 0 | 0 | 0 |
| III | Types of Yoga:-<br>According to Srimad Bhagavad Gita:- 1) Jnana yoga, 2) Karma yoga, 3) Dhyana yoga, 4) Bhakti yoga<br>Ashtanga yoga/ 8 limbs of yoga by Maharishi Patanjali written as a yoga sutra in yoga darshan book<br>1) Yama:- (i) Ahimsa (ii) Satya (iii) Asteya (iv) Brahmacharya (v) Aparigraha<br>2) Niyama:- (i) Saucha (ii) Santosha (iii) Tapa (iv) Swadhaya (v) Ishawara–pranidhana<br>3) Asana<br>4) Pranayama<br>5) Pratyahara<br>6) Dharana<br>7) Dhyana<br>8) Samadhi | 2 | 0 | 0 | 0 |
| IV | Yoga & Health:-<br>Concept of Adhi&Vyadhi<br>Concept of Health and Disease in yoga | 0 | 0 | 2 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| | Disease prevention and promotion of positive health through yoga<br>Stress management through Yoga,<br>Disease management yoga | | | | |
| V | Sukshma Vyayama/Sithilikarma Vyayama and Surya Namaskar, loosening ecercise of each part of the body particularly of the joints, 12 steps surya namaskar, Yogic Kriyas.<br>Neti/Dhauti/Trataka/Shankaprakshalana.<br>Yogasanas- | 0 | 0 | 2 | 0 |

## BOOKSFORREFERENCE:


YogrishiSwamiRamdev: YogainsynergywithMedicalScience,DivyaPrakashan, 2007

Swami Satyananda Saraswati:
YogaandCardioVascularManagement,YogaPublicationTrust,Munger,2005.

Clennell,BandIyengar,G.S.:TheWoman'sYogaBook:AsanaandPranayamaforAllPhasesoftheMenstrual Cycle, Menstrual Disorders (The Experience of Illness) (Paperback - Dec 3, 1992).

Nagarathna R and Nagendra H R: Yoga for Arthritis, Back pain, Diabetes, Pregnancy, Breathing Practices, Swami Vivekananda Yoga Prakasana, Bangalore, 2000.

RobinMonoro,NagarathnaRandNagendra,H.R.:YogaforCommonAilments,GuiaPublication,U.K.,1990

YogicmanagementofCommonDiseases:DrSwamiKarmananda;YogaPublicationTrust,Munger,Bihar.

Dr.ManmathMGharote,Dr.VijayKant:TherapeuticreferenceinTraditionalYogatexts.