# SCHEME OF TEACHING AND EXAMINATION

## BE (MECHANICAL ENGINEERING) IV Semester

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Board of Study</th>
<th>Sub. Code</th>
<th>SUBJECT</th>
<th>PERIODS PER WEEK</th>
<th>SCHEME OF EXAM</th>
<th>Total Marks</th>
<th>Credit</th>
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<td>7.</td>
<td>Mech. Engg</td>
<td>337461(37)</td>
<td>Fluid mechanics Lab</td>
<td>-</td>
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<td>Mech. Engg</td>
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<td>11.</td>
<td>Humanities</td>
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<td>Health, Hygiene &amp; Yoga</td>
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<td>Library</td>
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</tbody>
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**Total** | 23 | 6 | 11 | 640 | 120 | 240 | 1000 | 34 |

**L:** Lecture, **T:** Tutorial, **P:** Practical, **ESE:** End Semester Exam, **CT:** Class Test, **TA:** Teachers Assessment

*Note (1): Duration of all theory papers will be of Three Hours.*

*Note (2): Industrial Training of six weeks is mandatory for B.E. students. It is to be completed in two parts. The first part will be in summer after IV semester after which students have to submit a training report which will be evaluated by the college teachers during V Semester.*
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: Bachelor of Engineering  
Branch: Mechanical Engineering  
Subject: Fluid Mechanics  
Semester: IV  
Code: 337451(37)

Total Theory Periods: 40  
Total Tutorial Periods: 10  
Class Tests: Two (Minimum)  
Assignments: Two (Minimum)  
ESE Duration: Three Hours  
Maximum Marks: 80  
Minimum Marks: 28

Course Objectives:
- Obtaining a solid understanding of the fundamentals of Fluid Mechanics
- The ability to formulate basic equations for Fluid Engineering problems
- The ability to use tables and figures to determine the friction energy loss for various pipes/ducts geometries and Fluid engineering applications
- The ability to perform dimensional analysis and identify important parameters

UNIT-I  
Properties of fluid: Fluid, ideal and real fluid, properties of fluid : mass density, weight density, specific volume, specific gravity, viscosity, surface tension, capillarity, vapour pressure, compressibility and bulk modulus. Newtonian and non-Newtonian fluids

Fluid Statics: Pressure, Pascal’s law, Hydrostatic law, Manometry, Hydrostatic force on submerged plane and curved surface, Buoyancy and Flotation.

UNIT-II  
Fluid Kinematics: Description of fluid motion, Langragian and Eulerian approach, Type of fluid flow, Type of flow lines-path line, streak line, stream line, stream tube.Continuity equation, acceleration of a fluid particle, motion of fluid particle along curved path, Normal and tangential acceleration, Rotational flow, Rotation and Vorticity, circulation, stream and potential function, flow net ,its characteristics and utilities. Liquid in relative equilibrium.

UNIT-III  
Fluid Dynamics: Euler’s Equation, Bernoulli’s equation and its practical application, Venturimeter, Orifice meter, Nozzle, Pitot tube. Impulse momentum equation, Momentum of Momentum equation, Kinetic energy and Momentum correction factor, Vortex motion, Radial flow.

UNIT-IV  
Laminar Flow: Reynold’s experiment, flow of viscous fluids in circular pipe, shear stress and pressure gradient relationship, Velocity distribution, Hagen-Poiseuille Equation, flow of viscous fluids between two parallel plates (Coutte flow) shear stress and pressure gradient relationship, Velocity distribution, Drop of pressure head.

Turbulent flow: Effect of turbulence, Expression for loss of head due to friction in pipes (Darcy-Weisbach equation), Expression for co-efficient of friction in terms of shear stress.

Flow through pipe: Loss of energy in pipes, Hydraulic gradient and total energy line, pipe in series and parallel, equivalent pipe power transmission through pipe, water hammer in pipes.

UNIT-V  
Dimensional Analysis: Methods of dimensional analysis, Rayleigh’s method, Buckingham’s theorem, Limitations.

Model analysis: Dimensionless number and their significance, model laws, Reynolod’s model law, Fraude’s model law, Euler’s model law, Weber’s model law, Mach’s model law, Type of models, scale effect in model, limitation of hydraulic similitude.

Text Books:

Reference Books:
1. Fluid Mechanics & Hydraulics Machines-R.K.Bansal-Laxmi Publications.,Delhi
2. Engineering Fluid Mechanics –K.L. Kumar, Eurasia Publication House, Delhi
5. Introduction to Fluid Mechanics and Fluid Machines – S.K. Som and G. Biswas- TMH ,Delhi

Course Outcomes:
- Apply knowledge of Fluid Mechanics formulating and solving engineering problems.
- Acquire knowledge of fluid mechanics for the design and development of mechanical systems.
- Demonstrate creativeness in designing new systems components and processes in the field of engineering in general and mechanical engineering in particular.
- Identify, analysis, and solve mechanical engineering problems useful to the society.
- Work effectively with engineering and science teams as well as with multidisciplinary designs.
- Skillfully use modern engineering tools and techniques for mechanical engineering design, analysis and application.
- Develop fundamentals to continue the study of the advance subject fluid machinery, Heat and mass transfer etc.
Name of program: Bachelor of Engineering  
Branch: Mechanical Engineering  
Subject: Mechanics of Solids – II  
Semester: IV  
Code: 337452(37)  
Total Theory Periods: 40  
Total Tutorial Periods: 10  
Assignments: Two (Minimum)  
Class Tests: Two (Minimum)  
ESE Duration: Three Hours  
Maximum Marks: 80  
Minimum Marks: 28

Course Objectives:
- To analyze solid mechanics problems using energy methods
- To analyze fixed beams and continuous beams.
- To solve for stresses and deflections of beams under unsymmetrical loading;
- To analyze column
- To analyze thin and thick pressure vessels

UNIT- I  
**Energy Methods:** Introduction, Strain energy, Elastic strain energy in tension, compression, bending and torsion. Impact loading in tension and bending, Theorem of Castiglione’s and its applications, Reciprocal relations, Maxwell -Betti theorem,

UNIT-II  
**Fixed Beams:** Fixed beam subjected to different types of loads and couples, Calculations of fixing moments and reactions at supports, deflection. Effect of sinking of support.  
**Continuous beams:** Continuous beams subjected to different type of loads and couples, beams with overhang, beams with one end fixed, Chaperon’s theorem. Effect of sinking of supports.

UNIT-III  
**Bending of curved bars:** Bending of curved bars in plane of loading, Winkler- Bach theory, crane hooks, chain links, bending of circular bars subjected to symmetric loading, bending of circular rings, stresses in circular rings.

UNIT-IV  
**Unsymmetrical Bending:** Introduction to unsymmetrical bending, Stresses and deflection in unsymmetric bending, Shear center for angle, Channel and I-sections.  
**Columns:** Struts and Columns, Stability of columns, Euler’s formula for different end conditions, Equivalent load, Eccentric loading, Rankine’s formula.

UNIT-V  
**Thin Pressure Vessel:** Thin Pressure Vessels, Circumferential and longitudinal stresses in thin cylindrical shells and thin spherical shell under internal pressure,  
**Thick Pressure Vessel:** Introduction, Lames Theorem, Thick Pressure vessels subjected to internal pressure, External Pressure & both, compound cylinders.

Text Books:

Reference Books:

Course Outcomes:
- Apply knowledge of mechanics of deformable body for understanding, formulating and solving engineering problems.
- Acquire knowledge and hands-on competence in applying the concepts mechanics of solid in the design and development of mechanical systems.
- Demonstrate creativeness in designing new systems components and processes in the field of engineering in general and mechanical engineering in particular.
- Identify, analysis, and solve mechanical engineering problems useful to the society.
- Work effectively with engineering and science teams as well as with multidisciplinary designs.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: Bachelor of Engineering  
Branch: Mechanical Engineering  
Subject: Applied Thermodynamics  
Semester: IV  
Code: 337453(37)  
Total Theory Periods: 40  
Total Tutorial Periods: 10  
Class Tests: Two (Minimum)  
Assignments: Two (Minimum)  
ESE Duration: Three Hours  
Maximum Marks: 80  
Minimum Marks: 28

Course Objectives:
- To understand the applications of engineering thermodynamics in real life situations
- To perform gas power cycle analysis
- To analyze reciprocating air compressors
- To perform vapour power cycle analysis
- To analyze steam condenser, cooling pond and cooling towers.
- To analyze thermodynamic system with compressible fluid.

UNIT- I  
Gas power cycles: An overview of reciprocating engine, Air standard cycle, Otto, Diesel, dual cycle - Description and representation on P-V and T-S diagram, Thermal Efficiency, Mean Effective Pressures, comparison of cycles. An overview (only p-v and T-s diagram) of Stirling ,Erricson, Atkinson and Lenoir cycle

UNIT-II  
Reciprocating Air Compressors: Classification of air compressors, working of single acting single cylinder reciprocating compressor, single acting reciprocating compressor without clearance, single acting reciprocating compressor with clearance-equation of work, volumetric efficiency. Multistage reciprocating air compressors, advantage of multistage compression, two stage air compressor-minimum work, Indicator diagram, mean effective pressure and indicated power, compressor power , efficiencies, shaft power of the compressor, Advantages and limitations of reciprocating compressors.

UNIT-III  
Vapour Power Cycle: Simple steam power cycle, Rankine cycle; p-v, T-s and h-s diagrams, efficiency, steam rate, heat rate. Comparison of Rankine and Carnot cycles, mean temperature of heat addition, reheat cycle, ideal regenerative cycle, practical regenerative cycle, Feed Water Heaters (FWH) - open and closed FWH, characteristics of ideal working fluids, binary vapour cycle

UNIT-IV  
Steam Condensers: The function of condenser, Element of a water cooled condensing unit, types of condenser, advantages and disadvantages of various types of condenser, condenser vacuum, mass of circulating water required, source of air its effects and removal, vacuum efficiency, condenser efficiency  
Cooling ponds and Cooling tower: Cooling pond, cooling towers, classification and working principles.

UNIT-V  
Thermodynamics of Compressible Fluids: Velocity of pressure waves in a fluid, Mach number, isentropic stagnation state , stagnation enthalpy, temperature, pressure, density, one dimensional steady isentropic flow, area velocity relationship, critical properties-choking in isentropic flow, dimensionless velocity, Effect of back pressure on the performance of nozzle flow. Flow of steam through nozzle, throat area for maximum discharge, supersaturated Flow in nozzle.

Text Books:

Reference Books:
1. Fundamental of engineering thermodynamics- R.Yadav ,CPH, Allahabad
3. Fundamental of Thermodynamic- Claus Borgnakke, Richard E. Sonntag, Wiley,Delhi
4. An Introduction to Thermodynamics-Y.V.C.Rao ,University Prass, Hyderabad
6. Thermodynamics – C.P. Arora – TMH , Delhi

Course Outcomes:
- Apply knowledge of classical thermodynamics for formulating and solving engineering problems.
- Acquire knowledge and hands-on competence in applying the concepts of thermal sciences in the design and development of mechanical systems.
- Demonstrate creativeness in designing new systems components and processes in the field of engineering in general and mechanical engineering in particular.
- Identify, analysis, and solve mechanical engineering problems useful to the society.
- Work effectively with engineering and science teams as well as with multidisciplinary designs.
- Skillfully use modern engineering tools and techniques for mechanical engineering design, analysis and application.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: Bachelor of Engineering
Branch: Mechanical Engineering
Subject: Kinematics of Machines

Total Theory Periods: 40
Class Tests: Two (Minimum)
ESE Duration: Three Hours

Course Objectives:
- To synthesis, both graphically and analytically, multilink mechanisms.
- To perform mechanism analyses to find the position, velocity, acceleration, and dynamics of multi-bar mechanisms.
- To synthesis mechanism to perform certain prescribed task/motion
- To analyze gear trains.
- To analyze thrust bearings, Brakes and dynamometers.


UNIT-II Relative Acceleration: Synthesis of mechanism, Pantograph, Lower pair mechanism, Relative acceleration diagram, Kliens construction, Corolilis component of acceleration.


UNIT-IV Gear: Types of gears, Gear terminology, Law of gearing, Gear tooth forms, Involute and Cycloid tooth profile, Interference and Undercutting of Involutes teeth, Minimum number of teeth on pinion to avoid interference.

Gear trains: Simple, Compound, Reverted, and Epicyclical gear trains, computation of velocity ratio in gear trains by different methods.

UNIT-V (a) Friction: Applications of friction, Pivot and collar friction, Thrust bearing.
(b) Belt-Drives: Ratio of tensions for flat belt & V-belt, Centrifugal tension, condition for maximum power transmission.
(c) Brakes and dynamometer: Simple block and shoe brake, Band brake, Band and block brake, and internal expanding shoe brake, Absorption dynamometer, Transmission dynamometer.

Text Books:

Reference Books:
2. Theory of Machine – Shigley, JE
3. Theory of Machine Jagdish Lal

Course Outcomes:
- Apply knowledge of Kinematics of machine for understanding, formulating and solving engineering problems.
- Acquire knowledge and hands-on competence in applying the concepts kinematics of machine in the design and development of mechanical systems.
- Demonstrate creativeness in designing new systems components and processes in the field of engineering
- Identify, analysis, and solve mechanical engineering problems useful to the society.
- Work effectively with engineering and science teams as well as with multidisciplinary designs.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: Bachelor of Engineering
Branch: Mechanical Engineering
Subject: Numerical Analysis & Computer Programming (C & C++)
Semester: IV
Code: 337455(37)

Total Theory Periods: 40
Class Tests: Two (Minimum)
ESE Duration: Three Hours
Total Tutorial Periods: 10
Assignments: Two (Minimum)
Maximum Marks: 80
Minimum Marks: 28

Course Objectives:
- To learn about existence and uniqueness criteria for numerical methods
- To learn about convergences criteria and to be aware of reasons why numerical methods may fail.
- Find numerical approximations to the roots of an equation by Newton method, Bisection Method, Secant Method, etc.
- Find numerical solution to a system of linear equations by Gaussian Elimination and Gauss-Siedel Iterative
- Find numerical solution for Curve fitting
- Find numerical solution for ordinary differential equation.
- Find numerical solution for Partial differential equation.
- To understand the basics of computer programming

UNIT- I  Approximation and Errors in Computation: Approximation and round of errors, truncation errors and Taylor Series, Determination of roots of polynomials and transcendental equations by Graphical methods and Bisection, Regula-falsi, Secant and Newton-Raphson methods, Solution of Linear simultaneous, linear algebraic equations by Gauss Elimination Gauss-Jordan and Gauss-Siedel iteration method.


Text Books:

Reference Books:
5. Numerical Methods for Engineers – Steven C. Chapra, Raymond P. Canale, 4th Edn. – TMH, New Delhi

Course Outcomes:
- Apply knowledge of numerical analysis for understanding, formulating and solving engineering problems.
- Acquire knowledge and hands-on competence in applying the concepts of Numerical Analysis and Computer Programming in the analysis of mechanical systems.
- Identify, analysis, and solve mechanical engineering problems useful to the society.
- Work effectively with engineering and science teams as well as with multidisciplinary analysis.
Introduction to Manufacturing Processes:

UNIT- I


UNIT- II


UNIT- III


UNIT- IV


UNIT-V


Text Books:

Reference Books:

Course Outcomes:
- Acquire knowledge and hands-on competence in applying the concepts of manufacturing science in the design and development of mechanical systems.
- Demonstrate creativeness in designing new systems components and processes in the field of engineering in general and mechanical engineering in particular.
- Work effectively with engineering and science teams as well as with multidisciplinary designs.
- Skillfully use modern engineering tools and techniques for mechanical engineering design, analysis and application.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: Bachelor of Engineering
Branch: Mechanical Engineering
Subject: Fluid Mechanics Laboratory
Semester: IV
Code: 337461(37)
Total Lab Periods: 24
Batch Size: 30
Maximum Marks: 40
Minimum Marks: 20

List of Experiments: (At least Ten experiments are to be performed by each student)

1. To determine the meta-centric height of a ship model.
2. To verify Bernoulli’s Theorem.
3. To verify Impulse Momentum Principle.
4. To calibrate a Venturimeter and study the variation of coefficient of discharge.
5. To calibrate an orifice-meter.
6. Experimental determination of critical velocity in pipe.
7. To determine of head loss in various pipe fittings.
9. To study the transition from laminar to turbulent flow and to determine the lower critical Reynold’s number.
10. To determine the hydraulic coefficients (Cc, Cd and Cv) of an orifice.
11. To determine the coefficient of discharge of a mouth piece.
12. To obtain the surface profile and the total head distribution of a forced vortex.
13. To study the velocity distribution in pipe and to compute the discharge by integrating velocity profile.
14. To study the variation of friction factor for pipe flow.
15. To determine the roughness coefficient of an open channel.

List of Equipment/Instruments/Machines/Software Required:

- Apparatus for determination of metacentric height
- Bernoulli’s apparatus
- Impact of jet apparatus
- Venturimeter
- Orificemeter
- Pipe friction apparatus
- Orifice apparatus
- Mouth Piece apparatus with the provision for determination of hydraulic coefficient Cc, Cd & Cv
- Vortex flow apparatus
- Apparatus of head loss in various pipe fittings.
- Reynold’s apparatus
- Complete setup for flow measurement using Pitot tube
- Complete set for open channel apparatus
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<th>Name of program:</th>
<th>Bachelor of Engineering</th>
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<td>Branch:</td>
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<td>Subject:</td>
<td>Computer Aided Drafting</td>
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**List of Experiments:**

1. Understanding of various 3D CAD commands and creating simple 3D objects.
2. Understanding of holes, cuts and model tree relations.
3. Creation of shafts, rounds, chamfers and slots.
4. Sketch Tools & Datum planes.
5. Creation of objects by Extrusion, revolved features (Simple protrusion), patterns and copies.
6. Creation of objects by sweeps and blends (Advance protrusion) methods.
7. Creation of engineering drawing details such as dimensioning, sectional views, adding esthetics.
8. Assembling of part models using constraints.

**List of Equipment/Instruments/Machines/Software Required:**

2. Software Required – Drafting Software.
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**List of Experiments:**

1. To determine the jump phenomena of cam follower apparatus.
2. To draw displacement, velocity and acceleration curve of cam motion.
3. To find out the load carrying capacity of bearing.
4. To find out the Coefficient of friction of bearing.
5. To find out the frictional horse power of bearing.
6. To find out the Pressure around the bearing by journal bearing apparatus.
7. To measure co-efficient of friction, power transmitted with varied belt tension by slip & creep apparatus.
8. To find out the percentage slip at fixed belt tension by varying load with slip & creep apparatus.
9. To find out belt slip and creep by slip and creep measurement apparatus.
10. To verify the coriolli’s component of acceleration with theoretical and practical results.
11. To find the speed and torque of different gear in an epicyclic gear train.
12. To find the speed and torque of different gear in a simple, compound and reverted gear train.
13. To Study and analysis of Pantograph.
14. To study Four-bar mechanism and its inversions.
15. To study internal expanding and external contracting shoe brakes.
16. To study rope brake dynamometer and calculation of torque and power.

**List of Equipment/Instruments/Machines/Software Required:**

- Cam analysis apparatus
- Journal bearing apparatus.
- Coriolli’s component of acceleration apparatus
- Slip & Creep Measurement Apparatus in Belt Drive
- Simple, compound, reverted and epicyclic gear train apparatus.
- Pantograph apparatus (with all accessories)
- Internal / external shoe brake (complete set with accessories)
- Four bar mechanism and its inversions.
- Rope brake dynamometer apparatus (with all accessories)
- Mechanoset.
Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program: Bachelor of Engineering  
Branch: Mechanical Engineering  
Subject: Numerical Analysis & Computer Programming Laboratory  
Semester: IV  
Code: 337464(37)

Total Lab Periods: 24  
Maximum Marks: 40  
Batch Size: 30  
Minimum Marks: 20

**List of Experiments:**

1. Write a program to calculate the area & perimeter of the rectangle and the area & circumference of the circle. The length and breadth of a rectangle and radius of a circle are input through keyboard.

2. Write a program to determine whether the character entered through a keyboard is a capital letter, a small case letter, a digit or a special symbol.

3. Write a program to add first seven terms of the following series using looping statements series is \[ S = \frac{1}{1!} + \frac{2}{2!} + \frac{3}{3!} + \frac{4}{4!} + \ldots \ldots. \]

4. Write a program which has the following options:
   a. Factorial of a number
   b. Prime or not
   c. Odd or even

5. Write a program to implement Bubble sort on a set of 10 numbers.

6. Write a program to store every character typed at the keyboard into a file. The procedure should come to an end as soon as the ‘Esc’ key is pressed.

7. Write a program to find the roots of an equation using Newton Raphson Method.

8. Write a program to practice one of the Numerical Integration Method.

9. Write a program to find the solution of Differential Equation by Modified Euler’s Equation.

10. Write a program to find the solution of Differential Equation by Runge Kutta Equation.

**List of Equipment/Instruments/Machines/Software Required:**

1. P-IV, 2.6 G. Hz., 128/256 MB SDRAM, 40 GB HDD, 1.44 MB FDD, 14” Colour Monitor, 52 X CD RW, Laser Scroll Mouse
2. Software Required – C & C++
Course Objectives:

1. To provide understanding the importance of health.
2. To provide insight into the hygiene aspect & quality of life.
3. To study the concepts of various medical therapy.
4. To practice the various yoga asanas.
5. To provide knowledge about common diseases and its cure through yoga asanas and pranayama.
6. To develop concentration through various methods.

UNIT- I HEALTH & HYGIENE: Concept of health, Physical health and mental health and wellbeing and how to achieve these, longevity and how to achieve it, concept and common rules of hygiene, cleanliness and its relation with hygiene; Overeating and underrating, amount of food intake required, intermittent fasting; adequate physical labour, sleep; consumption of junk fast food vs nutritious food; fruits, vegetables cereals and qualities of each of these.

UNIT-II INTRODUCTORY KNOWLEDGE OF COMMON STREAMS OF MEDICINAL CURE: History, development, basic concepts, modes of operation of Allopathy, Ayurvedic, Homoeopathy, Biochemic, Unani, Siddha, Accurpressure, Accupuncture, Naturopathy, Yogic and Herbal system of medicines, Introduction of Anatomy and Physiology concerned.

UNIT- III YOGASANS: Meaning and concept of Yoga, Yogasans and its mode of operation, How to perform Yogasans, Common Yogasans with their benefits, such as, Padahastasan, Sarvangasan, Dhanurasan, Chakrasan, Bhujangasan, Paschimottasan, Gomukhasan, Mayurasan, Masyasan, Matsyendrasan, Pawanmuktasan, Vajrasan, Shalabhasan, Sinhasan, Shashankasan, Surya Namaskar, Halasan, Janushirasen, Utshep Mudra.

UNIT-IV YOGASANS FOR COMMON DISEASES: From Yogic Materia Medica with symptoms, causes, asans and herbal treatment.
- Modern silent killers: High blood pressure, diabetes and cancer, causes and cure; Common health problems due to stomach disorders, such as, indigestion, acidity, dysentery, piles and fissures, artheritis, its causes, prevention and cure.
- Asans for relaxation: Shavasan, Makarasan, Mastyakridasan, Shashankasan.
- Asans to increase memory and blood supply to brain: Shirs padasan, Shashankasan.
- Asans for eye sight: Tratak, Neti Kriya.
- Pranayam: Definition and types: Nadi Shodhan, Bhastrik, Shitakari, Bhramari useful for students.

UNIT-V CONCENTRATION: Concentration of mind and how to achieve it. Tratak (नाद), Concentration on breath, Japa (ज्ञाप), internal silence (चित्ताञ्जलि), visualization in mental sky (स्ववृत), Concentration on point of light (लक्ष्यान्तर), Concentration on feeling (नत्यान्तर), Concentration on figure (नामान्तर).

Text Books:
Health, Hygiene & Yoga, Dr P B Deshmukh, Gyan Book Pvt Ltd. New Delhi.

Reference Books:
(1) Yogic Materia Medica
(2) Asan, Pranayam and Bandh.
Supporting teachers. Cambridge English Teaching Qualifications such as TKT form an important part of our teacher development range. All of our teaching qualifications are mapped onto the Cambridge English Teaching Framework, which is designed to help teachers identify where they are in their career, plan where they want to get to and identify development activities to get there. Proven quality. TKT tests are available throughout the year and examination centres select their own test dates. Entries must be made at least six weeks in advance of a test date. Please note that more notice may be necessary if candidates have special requirements and therefore need special arrangements (see section on Special Circumstances). Subject code. Theory. Teaching scheme. Examination scheme. Periods per. Week. Internal Exam. : 20. Rationale & Objective: The reputation and success of any industry largely depends upon quality of its products. So, in modern industries, the whole plant has to contribute towards building quality to the product. As such, the concept of quality and its control has become one of the stringent requirements of modern industries. Hence, it is required to have a thorough understanding of the principle of the accurate and precise measurement techniques, concept of variability in measurement.

Mathematics-III 2. Teaching Scheme L T P 301B Theory 4 0 C Programming CE302 Theory 4 3. Business Data Processing CE303 Theory 4. Basic Electronics EC302 5.. Basic Electrical Engineering 6. Examination Scheme Internal Final/External Assessment Exam/*Committee Marks Hours of Exam Full Marks of Subject Pass marks/Ext Exam Pass marks in Subject 0. 25 9. Basic Electronics Lab EC305 Sessional 0 0 3 -. 50 20 30 -. 25 Total Hours of Teaching per week : Total Marks : * Committee Marks Theory L : : 20 500 Lecture, 00 14 Practical T : : 100 Tutorial Sessional P : : 150 Practical 1. The practical subjects (External examination) will be evaluated by an internal committee for 40% of the full marks and 40% of full marks by an external committee.