**Lesson Plan (2nd Semester)**

**Mathematics**

Mrs. Benu Bajaj, HOD (Applied Mathematic)

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory/Practical** | |
| **Lecture Day** | **Topic Including(assignment/Test)** |
| **Ist** | **1** | Introduction to syllabus and evaluation scheme  **Unit1:- Differential Calculus**  **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **2** | **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **3** | **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **4** | **1.2** Differentiation of xn , Sin x, Cos x, ex by first principle. |
| **IInd** | **1** | **1.3** Differentiation of sum, product and quotient of functions. |
| **2** | **1.3** Differentiation of sum, product and quotient of functions. |
| **3** | **1.3** Differentiation of sum, product and quotient of functions. |
| **4** | **Unit 2 Differential Calculus and Its Application**  **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **IIIrd** | **1** | **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **2** | **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **3** | **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
| **4** | **2.2** Application of differential calculus in:  (a) Rate measure (b) Maxima and minima |
| **IVth** | **1** | **2.2** Application of differential calculus in:  (a) Rate measure (b) Maxima and minima |
| **2** | **2.2** Application of differential calculus in:  (a) Rate measure (b) Maxima and minima |
| **3** | Revision |
| **4** | **Unit 3 Integral Calculus**  **3.1** Integration as inverse operation of differentiation with simple examples. |
| **Vth** | **1** | First Sessional Test(Tentative) |
| **2** | First Sessional Test(Tentative) |
| **3** | First Sessional Test(Tentative) |
| **4** | **3.1** Integration as inverse operation of differentiation with simple examples. |
| **VIth** | **1** | **3.1** Integration as inverse operation of differentiation with simple examples. |
| **2** | **3.2** Simple standard integrals and related problems, Integration by Substitution method and integration by parts. |
| **3** | **3.2** Simple standard integrals and related problems, Integration by Substitution method and integration by parts. |
| **4** | **3.3** Evaluation of definite integrals with given limits.  Evaluation of x. dx, x dx, x . dx,  Using formula without proof (m and n being positive integers only) using pre-existing mathematical models. |
| **VIIth** | **1** | **3.3** Evaluation of definite integrals with given limits.  Evaluation of x. dx, x dx, x . dx,  Using formula without proof (m and n being positive integers only) using pre-existing mathematical models. |
| **2** | **Unit4:- Application of Integration, Numerical Integration and Differential Equations**  **4.1** Application of integration for evaluation of area under a curve and axes (Simple problems). |
| **3** | **4.1** Application of integration for evaluation of area under a curve and axes (Simple problems). |
| **4** | **4.2** Numerical of integration by Trapezoidal rule and Simpson’s 1/3rd Rule using pre-existing mathematical models. |
| **VIIIth** | **1** | **4.2** Numerical of integration by Trapezoidal rule and Simpson’s 1/3rd Rule using pre |
| **2** | **Deferential, Equations**  **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method. |
| **3** | **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method. |
| **4** | Revision |
| **IXth** | **1** | Second Sessional Test(Tentative) |
| **2** | Second Sessional Test(Tentative) |
| **3** | Second Sessional Test(Tentative)., |
| **4** | **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method. |
| **Xth** | **1** | **Unit 5 Statistics and Software:- Statistics**  **5.1 Measures of Central Tendency:** Mean, Median, Mode |
| **2** | **5.1 Measures of Central Tendency:** Mean, Median, Mode |
| **3** | **5.2 Measures of Dispersion:** Mean deviation, Standard deviation |
| **4** | **5.2 Measures of Dispersion:** Mean deviation,Standard Deviation |
| **XIth** | **1** | **5.2 Measures of Dispersion:** Mean deviation,Standard Deviation |
| **2** | **Software**  **5.3 Sci lab Software**- Theoretical Introduction. |
| **3** | **5.3 Sci lab Software**- Theoretical Introduction. |
| **4** | **5.4** Basic difference between MATLAB and Sci Lab Software, |
| **XIIth** | **1** | **5.4** Basic difference between MATLAB and Sci Lab Software, |
| **2** | **5.5 Calculations with MATLAB or Sci Lab –** (a) Representation of matrix (2\*2 order),  (b) Additional , Subtraction of matrices (2\*2 order) in MATLAB or Sci Lab |
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| **XIIIth** | **1** | Third Sessional Test (Tentative). |
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| **4** | Revision |
| **XIVth** | **1** | Revision |
| **2** | Revision |
| **3** | Revision |
| **4** | Revision |
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| **2** | Revision |
| **3** | Revision |
| **4** | Revision |

**Lesson Plan (2nd Semester)**

**Mathematics**

Mrs. Sunita Devi, Lecturer (Applied Mathematic)

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| --- | --- | --- |
| **Week** | **Theory/Practical** | |
| **Lecture Day** | **Topic Including(assignment/Test)** |
| **Ist** | **1** | Introduction to syllabus and evaluation scheme  **Unit1:- Differential Calculus**  **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **2** | **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **3** | **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only. |
| **4** | **1.2** Differentiation of xn , Sin x, Cos x, ex by first principle. |
| **IInd** | **1** | **1.3** Differentiation of sum, product and quotient of functions. |
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| **4** | **Unit 2 Differential Calculus and Its Application**  **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2nd order) |
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| **3** | Revision |
| **4** | **Unit 3 Integral Calculus**  **3.1** Integration as inverse operation of differentiation with simple examples. |
| **Vth** | **1** | First Sessional Test(Tentative) |
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| **2** | **Unit4:- Application of Integration, Numerical Integration and Differential Equations**  **4.1** Application of integration for evaluation of area under a curve and axes (Simple problems). |
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| **Xth** | **1** | **Unit 5 Statistics and Software:- Statistics**  **5.1 Measures of Central Tendency:** Mean, Median, Mode |
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**Lesson Plan (2nd Semester)**

**Mathematics**

Mrs. Ekta, Visiting Lecturer (Applied Mathematic)

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory/Practical** | |
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| **Xth** | **1** | **Unit 5 Statistics and Software:- Statistics**  **5.1 Measures of Central Tendency:** Mean, Median, Mode |
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| **2** | Revision |
| **3** | Revision |
| **4** | Revision |
| **XVth** | **1** | Revision |
| **2** | Revision |
| **3** | Revision |
| **4** | Revision |

**Lesson Plan**

**Physics (2nd Semester)**

Mrs. Kavita Rathee, Sr. Lecturer (Applied Physics)

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| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| **Ist** | **1** | **Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave)  **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length | **1** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1) |
| **2** | **1.3 Simple Harmonic** **Motion(SHM):**Definitions , Examples  **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation) | **2** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2) |
| **2nd** | **1** | **1.5** Free, forced and resonant vibrations with examples.  **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo | **1** | 2) To find the time period of a simple pendulum. (Group-1) |
| **2** | **Unit2:- Optics:-**  2.1 Reflection and refraction of light with laws, refractive index  2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems | **2** | 2) To find the time period of a simple pendulum. (Group-2) |
| **3rd** | **1** | **2.3** Total internal reflection and its applications, critical angle and conditions for total internal reflection | **1** | 3) To study variation of time period of simple pendulum with change in length of pendulum.(Group-1) |
| **2** | **2.4** Superposition of waves (concept only), definition of interference, diffraction and polarization of waves | **2** | 3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2) |
| **4th** | **1** | **2.5** Introduction of Microscope, Telescope and their applications | **1** | 4) To determine and verify the time period of Cantilever (Group-1) |
| **2** | Revision of above topics | **2** | 4) To determine and verify the time period of Cantilever.(Group-2) |
| **5th** | **1** | First Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
| **2** | First Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **6th** | **1** | **UNIT3:- Electrostatics and Electricity**  **3.1** Electric charge, unit of charge, conservation of charge | **1** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-1) |
| **2** | **3.2** Coulomb’s law of electrostatics  Assignment 1 | **2** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-2) |
| **7th** | **1** | **3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge  **3.4** Definition of electric flux, Gauss law (statement and formula) | **1** | 6) To study colour coding scheme of resistance. (Group-1) |
| **2** | **3.5** Capacitor and capacitance (with formula and unit)  **3.6** Electric current and its SI Unit, direct and alternating current | **2** | 6) To study colour coding scheme of resistance. (Group-2) |
| **8th** | **1** | **3.7** Resistance, conductance (definition and unit)  **3.8** Series and parallel combination of resistances | **1** | 7) To verify laws of resistances in series combination (Group-1) |
|  | **2** | **3.9** Ohm’s law (Statement and formula)  Assignment 2 | **2** | 7) To verify laws of resistances in series combination (Group-2) |
| **9th** | **1** | Second Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Second Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **10th** | **1** | **Unit 4 Classification of Materials and their Properties**  **4.1** Definition of energy level, energy bands  **4.2** Types of materials (conductor, semiconductors (introduction only) | **1** | 8) To verify laws of resistance in parallel combination .(Group-1) |
|  | **2** | **4.3 Introduction to magnetism, type of magnetic materials:**  Diamagnetic, paramagnetic and ferromagnetic materials with examples  **4.4** Magnetic field, magnetic lines of force, magnetic flux  **4.5** Electromagnetic induction (definition) | **2** | 8) To verify laws of resistance in parallel combination.(Group-2) |
| **11th** | **1** | **Unit5 Modern Physics**  **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion  **5.2** Engineering and medical applications of laser | **1** | 9) To find resistance of galvanometer by half deflection method (Group-1) |
|  | **2** | **5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors. | **2** | 9) To find resistance of galvanometer by half deflection method (Group-2) |
| **12th** | **1** | **5.4 Nanotechnology:** Introduction, definition of nonmaterial’s with examples, properties at nano scale, applications of nanotechnology (brief) | **1** | 10) To verify laws of reflection of light using mirror (Group-1) |
|  | **2** | Assignment 3 and Revision of above topics | **2** | 10) To verify laws of reflection of light using mirror (Group-2) |
| **13th** | **1** | Third Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Third Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **14th** | **1** | Revision of above topics | **1** | 11) To verify laws of refraction using glass slab.(Group-1) |
|  | **2** | Revision of above topics | **2** | 11) To verify laws of refraction using glass slab.(Group-2) |
| **15th** | **1** | Revision of above topics | **1** | 12) To find the focal length of a concave lens, using a convex lens.(Group-1) |
|  | **2** | Revision of above topics | **2** | 12) To find the focal length of a concave lens, using a convex lens.(Group-2) |

**Lesson Plan**

**Physics (2nd Semester)**

Ms. Anu Bala Lecturer (Applied Physics)

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| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| **Ist** | **1** | **Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave)  **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length | **1** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1) |
| **2** | **1.3 Simple Harmonic** **Motion(SHM):**Definitions , Examples  **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation) | **2** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2) |
| **2nd** | **1** | **1.5** Free, forced and resonant vibrations with examples.  **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo | **1** | 2) To find the time period of a simple pendulum. (Group-1) |
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| **5th** | **1** | First Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
| **2** | First Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **6th** | **1** | **UNIT3:- Electrostatics and Electricity**  **3.1** Electric charge, unit of charge, conservation of charge | **1** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-1) |
| **2** | **3.2** Coulomb’s law of electrostatics  Assignment 1 | **2** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-2) |
| **7th** | **1** | **3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge  **3.4** Definition of electric flux, Gauss law (statement and formula) | **1** | 6) To study colour coding scheme of resistance. (Group-1) |
| **2** | **3.5** Capacitor and capacitance (with formula and unit)  **3.6** Electric current and its SI Unit, direct and alternating current | **2** | 6) To study colour coding scheme of resistance. (Group-2) |
| **8th** | **1** | **3.7** Resistance, conductance (definition and unit)  **3.8** Series and parallel combination of resistances | **1** | 7) To verify laws of resistances in series combination (Group-1) |
|  | **2** | **3.9** Ohm’s law (Statement and formula)  Assignment 2 | **2** | 7) To verify laws of resistances in series combination (Group-2) |
| **9th** | **1** | Second Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Second Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **10th** | **1** | **Unit 4 Classification of Materials and their Properties**  **4.1** Definition of energy level, energy bands  **4.2** Types of materials (conductor, semiconductors (introduction only) | **1** | 8) To verify laws of resistance in parallel combination .(Group-1) |
|  | **2** | **4.3 Introduction to magnetism, type of magnetic materials:**  Diamagnetic, paramagnetic and ferromagnetic materials with examples  **4.4** Magnetic field, magnetic lines of force, magnetic flux  **4.5** Electromagnetic induction (definition) | **2** | 8) To verify laws of resistance in parallel combination.(Group-2) |
| **11th** | **1** | **Unit5 Modern Physics**  **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion  **5.2** Engineering and medical applications of laser | **1** | 9) To find resistance of galvanometer by half deflection method (Group-1) |
|  | **2** | **5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors. | **2** | 9) To find resistance of galvanometer by half deflection method (Group-2) |
| **12th** | **1** | **5.4 Nanotechnology:** Introduction, definition of nonmaterial’s with examples, properties at nano scale, applications of nanotechnology (brief) | **1** | 10) To verify laws of reflection of light using mirror (Group-1) |
|  | **2** | Assignment 3 and Revision of above topics | **2** | 10) To verify laws of reflection of light using mirror (Group-2) |
| **13th** | **1** | Third Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Third Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **14th** | **1** | Revision of above topics | **1** | 11) To verify laws of refraction using glass slab.(Group-1) |
|  | **2** | Revision of above topics | **2** | 11) To verify laws of refraction using glass slab.(Group-2) |
| **15th** | **1** | Revision of above topics | **1** | 12) To find the focal length of a concave lens, using a convex lens.(Group-1) |
|  | **2** | Revision of above topics | **2** | 12) To find the focal length of a concave lens, using a convex lens.(Group-2) |

**Lesson Plan**

**Physics (2nd Semester)**

Mrs. Radha, Lecturer (Applied Physics)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| **Ist** | **1** | **Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave)  **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length | **1** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1) |
| **2** | **1.3 Simple Harmonic** **Motion(SHM):**Definitions , Examples  **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation) | **2** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2) |
| **2nd** | **1** | **1.5** Free, forced and resonant vibrations with examples.  **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo | **1** | 2) To find the time period of a simple pendulum. (Group-1) |
| **2** | **Unit2:- Optics:-**  2.1 Reflection and refraction of light with laws, refractive index  2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems | **2** | 2) To find the time period of a simple pendulum. (Group-2) |
| **3rd** | **1** | **2.3** Total internal reflection and its applications, critical angle and conditions for total internal reflection | **1** | 3) To study variation of time period of simple pendulum with change in length of pendulum.(Group-1) |
| **2** | **2.4** Superposition of waves (concept only), definition of interference, diffraction and polarization of waves | **2** | 3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2) |
| **4th** | **1** | **2.5** Introduction of Microscope, Telescope and their applications | **1** | 4) To determine and verify the time period of Cantilever (Group-1) |
| **2** | Revision of above topics | **2** | 4) To determine and verify the time period of Cantilever.(Group-2) |
| **5th** | **1** | First Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
| **2** | First Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **6th** | **1** | **UNIT3:- Electrostatics and Electricity**  **3.1** Electric charge, unit of charge, conservation of charge | **1** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-1) |
| **2** | **3.2** Coulomb’s law of electrostatics  Assignment 1 | **2** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-2) |
| **7th** | **1** | **3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge  **3.4** Definition of electric flux, Gauss law (statement and formula) | **1** | 6) To study colour coding scheme of resistance. (Group-1) |
| **2** | **3.5** Capacitor and capacitance (with formula and unit)  **3.6** Electric current and its SI Unit, direct and alternating current | **2** | 6) To study colour coding scheme of resistance. (Group-2) |
| **8th** | **1** | **3.7** Resistance, conductance (definition and unit)  **3.8** Series and parallel combination of resistances | **1** | 7) To verify laws of resistances in series combination (Group-1) |
|  | **2** | **3.9** Ohm’s law (Statement and formula)  Assignment 2 | **2** | 7) To verify laws of resistances in series combination (Group-2) |
| **9th** | **1** | Second Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Second Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **10th** | **1** | **Unit 4 Classification of Materials and their Properties**  **4.1** Definition of energy level, energy bands  **4.2** Types of materials (conductor, semiconductors (introduction only) | **1** | 8) To verify laws of resistance in parallel combination .(Group-1) |
|  | **2** | **4.3 Introduction to magnetism, type of magnetic materials:**  Diamagnetic, paramagnetic and ferromagnetic materials with examples  **4.4** Magnetic field, magnetic lines of force, magnetic flux  **4.5** Electromagnetic induction (definition) | **2** | 8) To verify laws of resistance in parallel combination.(Group-2) |
| **11th** | **1** | **Unit5 Modern Physics**  **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion  **5.2** Engineering and medical applications of laser | **1** | 9) To find resistance of galvanometer by half deflection method (Group-1) |
|  | **2** | **5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors. | **2** | 9) To find resistance of galvanometer by half deflection method (Group-2) |
| **12th** | **1** | **5.4 Nanotechnology:** Introduction, definition of nonmaterial’s with examples, properties at nano scale, applications of nanotechnology (brief) | **1** | 10) To verify laws of reflection of light using mirror (Group-1) |
|  | **2** | Assignment 3 and Revision of above topics | **2** | 10) To verify laws of reflection of light using mirror (Group-2) |
| **13th** | **1** | Third Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Third Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **14th** | **1** | Revision of above topics | **1** | 11) To verify laws of refraction using glass slab.(Group-1) |
|  | **2** | Revision of above topics | **2** | 11) To verify laws of refraction using glass slab.(Group-2) |
| **15th** | **1** | Revision of above topics | **1** | 12) To find the focal length of a concave lens, using a convex lens.(Group-1) |
|  | **2** | Revision of above topics | **2** | 12) To find the focal length of a concave lens, using a convex lens.(Group-2) |

**Lesson Plan**

**Physics (2nd Semester)**

Mr. Madhu Bala, Guest Faculty (Applied Physics)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| **Ist** | **1** | **Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave)  **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length | **1** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1) |
| **2** | **1.3 Simple Harmonic** **Motion(SHM):**Definitions , Examples  **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation) | **2** | 1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2) |
| **2nd** | **1** | **1.5** Free, forced and resonant vibrations with examples.  **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo | **1** | 2) To find the time period of a simple pendulum. (Group-1) |
| **2** | **Unit2:- Optics:-**  2.1 Reflection and refraction of light with laws, refractive index  2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems | **2** | 2) To find the time period of a simple pendulum. (Group-2) |
| **3rd** | **1** | **2.3** Total internal reflection and its applications, critical angle and conditions for total internal reflection | **1** | 3) To study variation of time period of simple pendulum with change in length of pendulum.(Group-1) |
| **2** | **2.4** Superposition of waves (concept only), definition of interference, diffraction and polarization of waves | **2** | 3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2) |
| **4th** | **1** | **2.5** Introduction of Microscope, Telescope and their applications | **1** | 4) To determine and verify the time period of Cantilever (Group-1) |
| **2** | Revision of above topics | **2** | 4) To determine and verify the time period of Cantilever.(Group-2) |
| **5th** | **1** | First Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
| **2** | First Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **6th** | **1** | **UNIT3:- Electrostatics and Electricity**  **3.1** Electric charge, unit of charge, conservation of charge | **1** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-1) |
| **2** | **3.2** Coulomb’s law of electrostatics  Assignment 1 | **2** | 5) To verify Ohm’s laws by plotting a graph between voltage and current (Group-2) |
| **7th** | **1** | **3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge  **3.4** Definition of electric flux, Gauss law (statement and formula) | **1** | 6) To study colour coding scheme of resistance. (Group-1) |
| **2** | **3.5** Capacitor and capacitance (with formula and unit)  **3.6** Electric current and its SI Unit, direct and alternating current | **2** | 6) To study colour coding scheme of resistance. (Group-2) |
| **8th** | **1** | **3.7** Resistance, conductance (definition and unit)  **3.8** Series and parallel combination of resistances | **1** | 7) To verify laws of resistances in series combination (Group-1) |
|  | **2** | **3.9** Ohm’s law (Statement and formula)  Assignment 2 | **2** | 7) To verify laws of resistances in series combination (Group-2) |
| **9th** | **1** | Second Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Second Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **10th** | **1** | **Unit 4 Classification of Materials and their Properties**  **4.1** Definition of energy level, energy bands  **4.2** Types of materials (conductor, semiconductors (introduction only) | **1** | 8) To verify laws of resistance in parallel combination .(Group-1) |
|  | **2** | **4.3 Introduction to magnetism, type of magnetic materials:**  Diamagnetic, paramagnetic and ferromagnetic materials with examples  **4.4** Magnetic field, magnetic lines of force, magnetic flux  **4.5** Electromagnetic induction (definition) | **2** | 8) To verify laws of resistance in parallel combination.(Group-2) |
| **11th** | **1** | **Unit5 Modern Physics**  **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion  **5.2** Engineering and medical applications of laser | **1** | 9) To find resistance of galvanometer by half deflection method (Group-1) |
|  | **2** | **5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors. | **2** | 9) To find resistance of galvanometer by half deflection method (Group-2) |
| **12th** | **1** | **5.4 Nanotechnology:** Introduction, definition of nonmaterial’s with examples, properties at nano scale, applications of nanotechnology (brief) | **1** | 10) To verify laws of reflection of light using mirror (Group-1) |
|  | **2** | Assignment 3 and Revision of above topics | **2** | 10) To verify laws of reflection of light using mirror (Group-2) |
| **13th** | **1** | Third Sessional Test(Tentative) | **1** | Revision and Viva-voce (Group-1) |
|  | **2** | Third Sessional Test(Tentative) | **2** | Revision and Viva-voce (Group-2) |
| **14th** | **1** | Revision of above topics | **1** | 11) To verify laws of refraction using glass slab.(Group-1) |
|  | **2** | Revision of above topics | **2** | 11) To verify laws of refraction using glass slab.(Group-2) |
| **15th** | **1** | Revision of above topics | **1** | 12) To find the focal length of a concave lens, using a convex lens.(Group-1) |
|  | **2** | Revision of above topics | **2** | 12) To find the focal length of a concave lens, using a convex lens.(Group-2) |

**Lesson Plan**

**Chemistry**

Mrs. Veena Jakhar, Sr. Lecturer, (Chemistry)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Lecture Day** | **Theory** | **Practical** | |
| **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| 1st | 1st | **Unit1:- Atomic Structure,Periodic Table and Chemical Bonding** Bohr’s model of atom (qualitative treatment only), | 1st | 1.)To prepare standard solution of oxalic acid.(Group-1) |
| 2nd | Dual character of matter: derivation of  de-Broglie’s equation, Heisenberg’s Principle of Uncertainty, |
| 3rd | Modern concept of atomic  structure: definition of orbitals , shapes of s, p and d- orbitals, | 2nd | 1)To prepare standard solution of oxalic acid.(Group-2) |
| 2nd | 4th | Quantum numbers and their  Significance. | 1st | 2)To dilute the given KMnO4 solution(Group-1) |
| 5th | Electronic configuration: Aufbau and Pauli’s exclusion principles |
| 6th | Hund’s rule, electronic configuration of elements up to atomic number 30. | 2nd | 2)To dilute the given KMnO4 solution(Group-2) |
| 3rd | 7th | Modern Periodic law and Periodic table | 1st | 3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide  using a standard (N/10) oxalic acid solution.(Group-1) |
| 8th | Classification of elements into s, p, d and f-blocks,  metals, non-metals and metalloids |
| 9th | Chemical bonding: cause of bonding | 2nd | 3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide  using a standard (N/10) oxalic acid solution.(Group-2) |
| 4th | 10th | Ionic bond, covalent bond, and metallic bond (electron  sea or gas model) | 1st | Revision/viva |
| 11th | Physical properties of ionic, covalent and metallic substances. |
| 12th | **Unit2:- Metals and Alloys** Metals: mechanical properties of metals such as conductivity, elasticity, strength and  stiffness, luster, hardness, toughness, ductility, malleability, brittleness, and impact  resistance and their uses. | 2nd | Revision/viva |
| 5th | 13th | Definition of a mineral, ore, gangue, flux and slag Metallurgy of iron from haematite using  a blast furnace | 1st | 4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of  a standard sulphuric acid solution(Group-1) |
| 14th | Commercial varieties of iron. Definition,necessity of making alloys |
| 15th | Composition, properties and uses of  duralumin and steel. Heat treatment of steel- normalizing, annealing, quenching, tempering | 2nd | 4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of  a standard sulphuric acid solution(Group-2) |
| 6th | 16th | First Sessional Test(Tentative) | 1st | First Sessional Test(Tentative) |
| 17th | First Sessional Test(Tentative) | First Sessional Test(Tentative) |
| 18th | First Sessional Test(Tentative | 2nd | First Sessional Test(Tentative) |
| 7th | 19th | **Unit3:- Water ,Solutions,Acids and Bases** Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v  and v/v), | 1st | 5)To determine the total hardness of given water sample by EDTA method(Group-1) |
| 20th | Normality, molarity and molality and ppm. |
| 21th | Simple problems on solution  preparation. | 2nd | 5)To determine the total hardness of given water sample by EDTA method(Group-2) |
| 8th | 22th | Arrhenius concept of acids and bases, strong and weak acids and bases | 1st | 6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water  Gravimetrically(Group-1) |
| 23th | pH value of a  solution and its significance |
| 24th | pH scale. Simple numerical problems on pH of acids and  bases. | 2nd | 6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water  Gravimetrically(Group-2) |
| 9th | 25th | Hard and soft water, causes of hardness of water, types of hardness – temporary and  permanent hardness | 1st | Revision/viva(Group-1) |
| 26th | Expression of hardness of water, ppm unit of hardness disadvantages  of hard water; |
| 27th | Removal of hardness: removal of temporary hardness by boiling and Clark’s  method; removal of permanent hardness of water by Ion-Exchange method | 2nd | Revision/viva(Group-2) |
| 10th | 28th | Boiler problems caused by hard water: scale and sludge formation, priming and foaming,  caustic embrittlement | 1st | 7)To determine the pH of different solutions using a digital pH meter.(Group-1) |
|  | 29th | Water sterilization by chlorine, UV radiation and RO |
|  | 30th | **Unit4:- Fuels and Lubricants** Fuels: definition and classification of higher and lower calorific values, units of calorific  value, characteristics of an ideal fuel | 2nd | 7)To determine the pH of different solutions using a digital pH meter.(Group-2) |
| 11th | 31st | Second Sessional Test (Tentative) | 1st | Second Sessional Test (Tentative) |
| 32nd | Second Sessional Test (Tentative) |
| 33rd | Second Sessional Test (Tentative) | 2nd | Second Sessional Test (Tentative) |
| 12th | 34th | Petroleum: composition and refining of petroleum;  gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG | 1st | 8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-1) |
| 35th | Relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel |
| 36th | Lubricants- Functions and qualities of a good lubricant, | 2nd | 8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-2) |
| 13th | 37th | Classification of lubricants with  examples; lubrication mechanism | 1st | 9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-1) |
| 38th | Physical properties (brief idea only) of a  lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point |
| 39th | **Unit5:-- Polymers and Electrochemistry** Polymers and Plastics: definition of polymer, classification, addition and condensation  polymerization | 2nd | 9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-2) |
| 14th | 40th | Preparation properties and uses of polythene, PVC, Nylon-66, Bakelite;  definition of plastic | 1st | 10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-1) |
| 41th | Thermoplastics and thermosetting polymers; natural rubber and  neoprene, other synthetic rubbers (names only) |
| 42nd | Corrosion: definition, dry and wet corrosion, factors affecting rate of corrosion, methods of  prevention of corrosion | 2nd | 10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-2) |
| 15th | 43th | Third Sessional Test(Tentative) | 1st | Third Sessional Test(Tentative) |
|  | 44th | Third Sessional Test(Tentative) |
|  | 45th | Third Sessional Test(Tentative) | 2nd | Third Sessional Test(Tentative) |
| 16th | 46th | Hot dipping, metal cladding, cementation, quenching, cathodic  protection methods | 1st | Revision/Viva(Group-1) |
| 47th | Introduction and application of nanotechnology: nano-materials and their classification,  applications of nanotechnology in various engineering applications |
| 48th | Revision | 2nd | Revision/Viva(Group-2) |

**Lesson Plan**

**Chemistry**

Mr. Ravi Saini, Sr. Lecturer, (Chemistry)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Lecture Day** | **Theory** | **Practical** | |
| **Topic(Including Assignments)** | **Practical Day** | **Topic** |
| 1st | 1st | **Unit1:- Atomic Structure,Periodic Table and Chemical Bonding** Bohr’s model of atom (qualitative treatment only), | 1st | 1.)To prepare standard solution of oxalic acid.(Group-1) |
| 2nd | Dual character of matter: derivation of  de-Broglie’s equation, Heisenberg’s Principle of Uncertainty, |
| 3rd | Modern concept of atomic  structure: definition of orbitals , shapes of s, p and d- orbitals, | 2nd | 1)To prepare standard solution of oxalic acid.(Group-2) |
| 2nd | 4th | Quantum numbers and their  Significance. | 1st | 2)To dilute the given KMnO4 solution(Group-1) |
| 5th | Electronic configuration: Aufbau and Pauli’s exclusion principles |
| 6th | Hund’s rule, electronic configuration of elements up to atomic number 30. | 2nd | 2)To dilute the given KMnO4 solution(Group-2) |
| 3rd | 7th | Modern Periodic law and Periodic table | 1st | 3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide  using a standard (N/10) oxalic acid solution.(Group-1) |
| 8th | Classification of elements into s, p, d and f-blocks,  metals, non-metals and metalloids |
| 9th | Chemical bonding: cause of bonding | 2nd | 3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide  using a standard (N/10) oxalic acid solution.(Group-2) |
| 4th | 10th | Ionic bond, covalent bond, and metallic bond (electron  sea or gas model) | 1st | Revision/viva |
| 11th | Physical properties of ionic, covalent and metallic substances. |
| 12th | **Unit2:- Metals and Alloys** Metals: mechanical properties of metals such as conductivity, elasticity, strength and  stiffness, luster, hardness, toughness, ductility, malleability, brittleness, and impact  resistance and their uses. | 2nd | Revision/viva |
| 5th | 13th | Definition of a mineral, ore, gangue, flux and slag Metallurgy of iron from haematite using  a blast furnace | 1st | 4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of  a standard sulphuric acid solution(Group-1) |
| 14th | Commercial varieties of iron. Definition,necessity of making alloys |
| 15th | Composition, properties and uses of  duralumin and steel. Heat treatment of steel- normalizing, annealing, quenching, tempering | 2nd | 4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of  a standard sulphuric acid solution(Group-2) |
| 6th | 16th | First Sessional Test(Tentative) | 1st | First Sessional Test(Tentative) |
| 17th | First Sessional Test(Tentative) | First Sessional Test(Tentative) |
| 18th | First Sessional Test(Tentative | 2nd | First Sessional Test(Tentative) |
| 7th | 19th | **Unit3:- Water ,Solutions,Acids and Bases** Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v  and v/v), | 1st | 5)To determine the total hardness of given water sample by EDTA method(Group-1) |
| 20th | Normality, molarity and molality and ppm. |
| 21th | Simple problems on solution  preparation. | 2nd | 5)To determine the total hardness of given water sample by EDTA method(Group-2) |
| 8th | 22th | Arrhenius concept of acids and bases, strong and weak acids and bases | 1st | 6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water  Gravimetrically(Group-1) |
| 23th | pH value of a  solution and its significance |
| 24th | pH scale. Simple numerical problems on pH of acids and  bases. | 2nd | 6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water  Gravimetrically(Group-2) |
| 9th | 25th | Hard and soft water, causes of hardness of water, types of hardness – temporary and  permanent hardness | 1st | Revision/viva(Group-1) |
| 26th | Expression of hardness of water, ppm unit of hardness disadvantages  of hard water; |
| 27th | Removal of hardness: removal of temporary hardness by boiling and Clark’s  method; removal of permanent hardness of water by Ion-Exchange method | 2nd | Revision/viva(Group-2) |
| 10th | 28th | Boiler problems caused by hard water: scale and sludge formation, priming and foaming,  caustic embrittlement | 1st | 7)To determine the pH of different solutions using a digital pH meter.(Group-1) |
|  | 29th | Water sterilization by chlorine, UV radiation and RO |
|  | 30th | **Unit4:- Fuels and Lubricants** Fuels: definition and classification of higher and lower calorific values, units of calorific  value, characteristics of an ideal fuel | 2nd | 7)To determine the pH of different solutions using a digital pH meter.(Group-2) |
| 11th | 31st | Second Sessional Test (Tentative) | 1st | Second Sessional Test (Tentative) |
| 32nd | Second Sessional Test (Tentative) |
| 33rd | Second Sessional Test (Tentative) | 2nd | Second Sessional Test (Tentative) |
| 12th | 34th | Petroleum: composition and refining of petroleum;  gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG | 1st | 8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-1) |
| 35th | Relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel |
| 36th | Lubricants- Functions and qualities of a good lubricant, | 2nd | 8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-2) |
| 13th | 37th | Classification of lubricants with  examples; lubrication mechanism | 1st | 9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-1) |
| 38th | Physical properties (brief idea only) of a  lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point |
| 39th | **Unit5:-- Polymers and Electrochemistry** Polymers and Plastics: definition of polymer, classification, addition and condensation  polymerization | 2nd | 9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-2) |
| 14th | 40th | Preparation properties and uses of polythene, PVC, Nylon-66, Bakelite;  definition of plastic | 1st | 10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-1) |
| 41th | Thermoplastics and thermosetting polymers; natural rubber and  neoprene, other synthetic rubbers (names only) |
| 42nd | Corrosion: definition, dry and wet corrosion, factors affecting rate of corrosion, methods of  prevention of corrosion | 2nd | 10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-2) |
| 15th | 43th | Third Sessional Test(Tentative) | 1st | Third Sessional Test(Tentative) |
|  | 44th | Third Sessional Test(Tentative) |
|  | 45th | Third Sessional Test(Tentative) | 2nd | Third Sessional Test(Tentative) |
| 16th | 46th | Hot dipping, metal cladding, cementation, quenching, cathodic  protection methods | 1st | Revision/Viva(Group-1) |
| 47th | Introduction and application of nanotechnology: nano-materials and their classification,  applications of nanotechnology in various engineering applications |
| 48th | Revision | 2nd | Revision/Viva(Group-2) |

**Lesson Plan**

**Environmental Studies and Disaster Management**

Mr. Rahul, Lecturer (ES)

|  |  |  |
| --- | --- | --- |
| **Week** | **Theory/Practical** | |
| **Lecture Day** | **Topic Including(assignment/Test)** |
| **Ist** | **1** | **Unit1:- Introduction** Basics of Ecology , Eco system Concept and sustainable development |
| **2** | Sources ,advantages ,disadvantages of renewable and non-renewable energy |
| **IInd** | **1** | Rain Water Harvesting |
| **2** | Deforestation – its effects and control measures |
| **IIIrd** | **1** | **Unit2:- Air and Noise Pollution** Air Pollution: Source of Air Pollution |
| **2** | Effect of Air Pollution on Human Health, Economy, Air Pollution control Methods |
| **IVth** | **1** | Noise Pollution: Sources of Noise Pollution, unit of noise ,Effect of Noise Pollution, Acceptable Noise Level, different Methods of minimizing Noise Pollution |
| **2** | Revision of Above topics |
| **Vth** | **1** | **Unit3:- Water and Soil Pollution** Water Pollution: Impurities in water, Cause of water Pollution |
| **2** | Sources of water Pollution. Effect of water pollution on human health |
| **VIth** | **1** | First Sessional Test(Tentative) |
| **2** | First Sessional Test(Tentative) |
| **VIIth** | **1** | Concept of DO ,BOD, COD |
| **2** | Prevention of water Pollution- water treatment processes |
| **VIIIth** | **1** | Sewage treatment ,Water quality standard |
| **2** | Soil Pollution: Sources of soil Pollution |
| **IXth** | **1** | Effect and control of soil pollution |
| **2** | Type of solid waste- House hold, Industrial, Agricultural, Bio-Medical, Disposal of Solid waste. |
| **Xth** | **1** | Solid waste management E-waste ,E-waste management |
| **2** | **Unit4:- Impact of Energy Usage on Environment** Global Warming ,Green House Effect , Depletion of Ozone Layer |
| **XIth** | **1** | Second Sessional Tests(Tentative) |
| **2** | Second Sessional Tests(Tentative) |
| **XIIth** | **1** | Acid Rain .Eco Friendly Material, Recycling of Material, Concept of Green Building |
| **2** | Concept of Carbon credit and Carbon Foot Print |
| **XIIIth** | **1** | **Unit5:- Disaster Management** **A**  Different type of Disaster ,Natural Disasters such as Flood ,Cyclone ,Earth Quake and Landslides etc. |
| **2** | Manmade Disasters such as Fire, Industrial Pollution, Nuclear Disasters, biological Disasters. |
| **XIVth** | **1** | Accidents(Air , Sea Rain and Road) , Structural Failures (Building and Bridges) , War and Terrorism |
| **2** | B Disaster Preparedness Disaster Preparedness plan : Prediction ,Early warnings and safety measures of Disaster Psychological Response and Management (Trauma, Stress, Rumour and Panic) |
| **XVth** | **1** | Third Sessional Test(Tentative) |
| **2** | Third Sessional Test(Tentative) |
| **XVIth** | **1** | Revision of above Syllabus |
| **2** | Revision of above Syllabus |

**1.1 ENGLISH & COMMUNICATION SKILLS –I (Civil/Electrical/Computer/Mechanical/Electronics/I&C)**

**L P**

**2 2**

**RATIONALE**

Language as the most commonly used medium of self-expression remains indispensable in alls spheres of human life –personal, social and professional. This course is intended to break fresh ground in teaching of Communicative English as per the requirements of National Skill Quality Framework. This course is designed to help students to acquire the concept of communicationand develop an ability or skills to use them effectively to communicate with the individuals and community.

**COURSE OUTCOMES**

After undergoing this course, the students will be able to:

CO1: Identify the nuances of Communication, both Oral and Written.

CO2: Acquire knowledge of the meaning of communication, communication process and Speaking skills.

CO3: Acquire enhanced vocabulary and in-depth understanding of Grammatical Structures and their usage in the communication.

CO4: Communicate effectively with an increased confidence to read, write and speak in English language fluently.

**DETAILED CONTENTS**

**UNIT I**

Reading

1.1 Techniques of reading: Skimming and Scanning

1.2 Extensive and Intensive Reading: Textual Study

1.3 Homecoming – R.N. Tagore

1.4 Life Sketch of Sir Mokshagundam Visvesvarayya

1.5 Life Sketch of Dr. Abdul Kalam

1.6 Narayan Murthy’s speech at LBSNA, Dehradun

**UNIT II**

**Fundamentals of Communication**

2.1 Concept and Process of Communication,

2.2 Types of Communication (Verbal Communication)

2.3 Barriers to Communication

2.4 Speaking Skill: Significance and essentials of Spoken Communication

2.5 Listening Skill: Significance and essentials of Listening

**UNIT III**

**Grammar and Usage**

3.1 Nouns

3.2 Pronouns

3.3 Articles

3.4 Verbs(Main and Auxiliary)

3.5 Tenses

**UNIT IV**

**Writing Skills**

4.1 Significance, essentials and effectiveness of Written Communication

4.2 Notice Writing

4.3 Official Letters and E-mails.

4.4 Frequently-used Abbreviations used in Letter-Writing

4.5 Paragraph Writing

4.6 Netiquettes

**PRACTICAL EXERCISES**

1  **Reading**

Reading Practice of lessons in the Lab Activity classes.

1. Comprehension exercises of unseen passages along with the lessons prescribed.
2. Vocabulary enrichment and grammar exercises based on the selected readings.
3. Reading aloud Newspaper headlines and important articles.

2  **Fundamentals of Communication**

i. Introducing oneself, others and leave- taking(talking about yourself)

ii. Just a minute (JAM) sessions: Speaking extempore for one minute on given topics

iii. Situational Conversation: Offering-Responding to offers; Congratulating; Apologising and Forgiving; Complaining; Talking about likes and dislikes, Self-introduction Mock Interviews.

3 **Grammar and Usage**

i. Written and Oral Drills will be undertaken in the class to facilitate holistic linguistic competency among learners.

ii. Exercises on the prescribed grammar topics.

4 **Writing Skills**

1. Students should be given Written Practice in groups so as to inculcate team-spirit and collaborative learning
2. Group exercises on writing paragraphs on given topics.

iii. Opening an e-mail account, receiving and sending emails

**RECOMMENDED BOOKS**

1. Alvinder Dhillon and Parmod Kumar Singla, “Text Book of English and Communication Skills Vol – 2”, M/S Abhishek Publications, Chandigarh.
2. V Sasikumar & PV Dhamija, “Spoken English”, Tata MC Graw Hills, New Delhi,Second Edition.
3. JK Gangal, “A Practical Course in Spoken English”, PHI Learning Pvt. Ltd., New Delhi.
4. NK Aggarwal and FT Wood, “English Grammar, Composition and Usage”, MacmillanPublishers India Ltd., New Delhi.
5. RC Sharma and Krishna Mohan, “Business Correspondence & Report writing”, Tata MC Graw Hills, New Delhi, Fourth Edition.
6. Kavita Tyagi & Padma Misra, “Professional Communication”, PHI Learning Pvt. Ltd., New Delhi.
7. Nira Konar, “Communication Skills for professionals”, PHI Learning Pvt. Ltd., New Delhi
8. Krishna Mohan & Meera Banerji, “Developing Communication Skills”, Macmillan Publishers India Ltd., New Delhi, Second Edition
9. M. Ashraf Rizwi, “Effective Technical Communication”, Tata MC Graw Hills, New Delhi.
10. Andrea J Rutherfoord, “Basic Communication Skills for Technology”, Pearson

Education, New Delhi.

**INSTRUCTIONAL STRATEGY**

This is practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required communication skills in the students. This subject contains four units of equal weight age.

**1.2 APPLIED MATHEMATICS – I**

**(Civil/Electrical/Computer/Mechanical/Electronics/I&C)**

**L P**

**4 -**

**RATIONALE**

Contents of this course provide fundamental base for understanding engineering problems and their solution algorithms. Contents of this course will enable students to use basic tools like logarithm, binomial theorem, matrices, t-ratios and co-ordinates for solving complex engineering problems with exact solutions in a way which involve less computational task. By understanding the logarithm, they will be able to make long calculations in short time and it is also a pre-requisite for understanding Calculus.

**COURSE OUTCOMES**

After undergoing this course, the students will be able to:

CO1: Understand the geometric shapes used in engineering problems by Co-ordinateGeometry and Trigonometry.

CO2: Formulate engineering problems into mathematical formats with the use matrices, co-ordinate geometry and trigonometry

CO3: Calculate the approximate value of roots of certain expressions in engineering problems by application of binomial theorem.

CO4: Explore the idea of location, graph, and linear relationships between two variables.

CO5: Learn about basic fundamentals about MATLAB/ SciLab and mathematical calculation with MATLAB/ SciLab software.

**DETAILED CONTENTS**

**UNIT I**

**Algebra**

1.1 Complex Numbers: definition of complex number, real and imaginary parts of a complex number, Polar and Cartesian Form and their inter conversion, Conjugate of a complex number, modulus and amplitude, addition subtraction, multiplication and division of complex numb

1.2 Logarithms and its basic properties

**UNIT II**

**Binomial Theorem, Determinants and Matrices**

2.1 Meaning of npr &ncr (mathematical expression). Binomial theorem (without proof) for positive integral index (expansion and general form); binomial theorem for any index (expansion up to 3 terms - without proof), first binomial approximation with application to engineering problems.

2.2 Determinants and Matrices – Evaluation of determinants (upto 2ndorder), solution of equations (upto 2 unknowns) by Crammer’s rule, definition of Matrices and its types, addition, subtraction and multiplication of matrices (upto 2nd order).

**UNIT III**

**Trigonometry**

3.1 Concept of angle, measurement of angle in degrees, grades, radians and their conversions.

3.2 T-Ratios of Allied angles (without proof), Sum, Difference formulae and their applications (without proof). Product formulae (Transformation of product to sum,difference and vice versa

3.3 Applications of Trigonometric terms in engineering problems such as to find an angle of elevation, height, distance etc.

**UNIT-IV**

**Co-ordinate Geometry**

4.1 Cartesian and Polar co-ordinates (two dimensional), Distance between two points, mid-point, centroid of vertices of a triangle.

4.2 Slope of a line, equation of straight line in various standards forms (without proof); (slope intercept form, intercept form, one-point form, two-point form, symmetric form, normal form, general form), intersection of two straight lines, concurrency of lines, angle between straight lines, parallel and perpendicular lines, perpendicular distance formula, conversion of general form of equation to the various forms.

**UNIT V**

**Geometry of Circle and Software**

**Circle**

5.1 General equation of a circle and its characteristics. To find the equation of a circle, given:

i. Centre and radius

ii. Three points lying on it

iii Coordinates of end points of a diameter

**Software**

5.2 MATLAB Or SciLab software – Theoretical Introduction, MATLAB or Scilab as Simple Calculator (Addition and subtraction of values –Trigonometric and Inverse Trigonometric functions) – General Practice

**RECOMMENDED BOOKS**

1. R. D. Sharma, “Applied Mathematics – I & II for Diploma Courses”, Dhanpat Rai Publications.

2. “Mathematics for Class XI”, NCERT Publication, New Delhi.

3. “Mathematics for Class XII”, NCERT Publication, New Delhi.

4. H. K Dass, “Applied Mathematics for Polytechnics”, CBS Publishers & Distributers.

5. A Ganesh and G Balasubramanian, “Textbook of Engineering Mathematics – I”, CBS Publisher, New Delhi.

6. A Ganesh and G Balasubramanian, “Textbook of Engineering Mathematics –II”, CBS Publisher, New Delhi.

7. G. B. Thomas, R. L. Finney, “Calculus and Analytic Geometry”, Addison Wesley, Ninth Edition.

8. B S Grewal, “Elementary Engineering Mathematics”, Khanna Publishers, Delhi, Thirty-fifth edition.

9. R.K. Jain and S.R.K. Iyengar, “Advanced Engineering Mathematics”, Narosa Publishing House, New Delhi, Second Edition, 2003.

10. SS Sabharwal & Dr Sunita Jain, “Applied Mathematics Vol. I & II”, Eagle Parkashan, Jalandhar.

11. S Kohli, “Engineering Mathematics Vol. I & II”, IPH, Jalandhar.

12. Reena Garg & Chandrika Prasad, “Advanced Engineering Mathematics”, Khanna Publishing House, New Delhi

13. R. Pratap, “Getting Started with MATLAB 7”, Oxford University Press, Seventh Edition.

14. E-books/e-tools/relevant software to be used as recommended by

**AICTE/HSBTE/NITTTR.**

**SUGGESTED WEBSITES**

**1. http://swayam.gov.in**

**2. https://www.scilab.org**

This is theoretical subject and contains five units of equal weightage. Basic elements of algebra,trigonometry and co-ordinate geometry can be taught in the light of their applications in the field of engineering and technology. By laying more emphasis on applied part, teacher can also help in providing a good continuing education base to the students. Students need to be taught the skills needed to use software tools built by experts through multiple problem solving based on the topics related to Algebra, Trigonometry and Coordinate Geometry that the industry requires.Examples to be used should be related to engineering. Useful software MATLAB or open source software SciLab can be taught theoretically by books/online literatures and basic operations can be shown practically with practical software laboratory or small mobile apps of these software or authentic Trial version of MATLAB/ SciLab software. Students should be able to relate to the actual use of these examples and the way mathematical calculations will help them in doing their job.

**1.3 APPLIED PHYSICS-I**

**(Civil/Electrical/Computer/Mechanical/Electronics/I&C)**

**L P**

**2 2**

**RATIONALE**

Applied physics includes the study of a large number of diverse topics all related to things that go on in the world around us. It aims to give an understanding of this world both by observation and by prediction of the way in which objects will behave. Concrete use of physical principles and analysis in various technical fields are given prominence in the course content.

**COURSE OUTCOMES**

After completing this course, student should be able to:

CO1: Identify physical quantities, select their units and make measurements with accuracy.

CO2: Represent physical quantities as scalar and vector and identify type of motions, various forms of energy, their conversion and applications.

CO3: Elaborate scientific work, energy and power, forms of friction and solve problems related to them.

CO4: Comprehend properties of matter and effect of temperature on various matter and phenomenon.

CO5: Demonstrate the use of physical principles and analysis in various technical fields.

**DETAILED CONTENTS**

**UNIT I**

**Unit and Dimensions**

1.1 Definition of Physics, physical quantities- fundamental and derived

1.2 Units: fundamental and derived

1.3 System of units: CGS, FPS, MKS, SI

1.4 Dimension, dimensional formulae and SI units of physical quantities-distance,displacement, area, volume, density, velocity, acceleration, linear momentum, force,impulse, work, power, energy, pressure, surface tension, stress, strain)

1.5 Dimensional equations, principle of homogeneity of dimensional equation

1.6 Application of dimensional analysis: checking the correctness of physical equation,conversion of system of unit (force, work, acceleration)

**UNIT II**

**Force and Motion**

2.1 Scalar and vector quantities– definition and examples, representation of vector, types of vector (unit vector, position vector, co-initial vector, collinear vector, co-planar vector)

2.2 Vector algebra- addition of vectors, Triangle &Parallelogram law (statement and formula only),

2.3 Scalar and vector product (statement and formula only)

2.4 Force and its units, resolution of force (statement and formula only)

2.5 Newton’s laws of motion (statement and examples)

2.6 Linear momentum, Law of conservation of linear momentum (statement and examples), Impulse

2.7 Circular motion: definition of angular displacement, angular velocity, angular acceleration, frequency, time period; Relation between linear and angular velocity,centripetal and centrifugal forces (definition and formula only), application of centripetal force in banking of road

2.8 Rotational motion: definition with examples

2.9 Definition of torque, angular momentum, moment of inertia and its physical significance

**UNIT III**

**Work, Power and Energy**

3.1 Work- definition, symbol, formula and SI unit, types of work (zero work, positive work and negative work) with example

3.2 Friction– definition and its simple daily life applications

3.3 Power- definition, formula and units

3.4 Energy- definition and its SI unit, examples of transformation of energy.

3.5 Kinetic energy- definition, examples, formulaand its derivation

3.6 Potential energy- definition, examples, formulaand its derivation

3.7 Law of conservation of mechanical energy for freely falling bodies (with derivation)

3.8 Simple numerical problems based on formula of Power and Energy

**UNIT IV**

**Properties of Matter**

4.1 Elasticity and plasticity- definition, deforming force, restoring force, example of elastic and plastic body

4.2 Definition of stress and strain, Hooke’s law, modulus of elasticity

4.3 Pressure- definition, atmospheric pressure, gauge pressure, absolute pressure, Pascal’s law

4.4 Surface tension- definition, SI unit, applications of surface tension, effect of temperature on surface tension

4.5 Viscosity: definition, unit, examples, effect of temperature on viscosity

**UNIT V**

**Heat and Temperature**

5.1 Definition of heat and temperature (on the basis of kinetic theory)

5.2 Difference between heat and temperature

5.3 Principle and working of mercury thermometer

5.4 Modes of transfer of heat- conduction, convection and radiation with examples.

5.5 Properties of heat radiation

5.6 Different scales of temperature and their relationship

**PRACTICAL EXCERCISES**

1. Familiarization of measurement instruments and their parts (for example – Vernier caliper, screw gauge, sphere meter, travelling microscope etc.), and taking a reading. (compulsory to all students)

2. To find diameter of solid cylinder using a Vernier caliper

3. To find internal dia meter and depth of a beaker using a Vernier caliper and hence find its volume.

4. To find the diameter of wire using screw gauge

5. To find thickness of paper using screw gauge.

6. To determine the thickness of glass strip using a sphero meter

7. To determine radius of curvature of a given spherical surface by a sphero meter.

8. To verify parallelgram law of force

9. To determine the atmospheric pressure at a place using Fortin’s Barometer

10. To determine force constant of spring using Hooke’s law

11. Measuring room temperature with the help of thermometer and its conversion in different scale.

**RECOMMENDED BOOKS**

1. “Text Book of Physics for Class XI (Part-I, Part-II)”, N.C.E.R.T., Delhi.

2. Dr.HH Lal, “Applied Physics, Vol.I and Vol.II”, TTTI Publications, Tata McGraw Hill, Delhi.

3. AS Vasudeva, “Applied Physics – I”, Modern Publishers, Jalandhar.

4. R A Banwait, “Applied Physics – I”, Eagle Prakashan, Jalandhar.

5. E-books/e-tools/relevant software to be used as recommended by AICTE/ HSBTE/NITTTR.

6. C. L. Arora, “Practical Physics”, S Chand Publication.

**SUGGESTED WEBSITES**

**1. http://swayam.gov.in**

**2. The Physics Classroom**

**3. https://www.khanacademy.org/science/physics**

**INSTRUCTIONAL STATREGY**

This is hands-on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills in the students. This subject contains five units of equal weightage.Teacher may use various teaching aids like models, charts, graphs and experimental kits etc. for imparting effective instructions in the subject. Students need to be exposed to use of different sets of units and conversion from one unit type to another. Software may be used to solve problems involving conversion of units. The teacher should explain about field applications before teaching the basics of mechanics, work, power and energy, rotational motion, properties of matter etc. to develop proper understanding of the physical phenomenon. Use of demonstration can make the subject interesting and develop scientific temper in the students.Teachers should give examples of engineering/technology applications of various concepts and principles in each topic so that students are able to appreciate learning of these concepts and principles. In all contents, SI units should be followed. Working in different sets of units can be taught through relevant software.

* 1. **APPLIED CHEMISTRY**

(Civil)

**L P**

**3 2**

**RATIONALE**

The regular use of a variety of chemistry based materials and processes in diverse technical and engineering fields have repeatedly proven the importance of Applied Chemistry and its role in current and future technological advancements. Ever increasing use of chemical materials in the emerging engineering applications demands engineers and technocrats to acquire an in-depth knowledge of Applied Chemistry to be able to choose the best suited materials to meet their needs while maintaining the environment sustainability. An understanding of the principles of Applied Chemistry will develop scientific attitude in the budding engineers to understand the physical and chemical properties of the available materials for engineering applications as well as an ability to design new and effective materials.

**COURSE OUTCOMES**

After studying this course, students will be able to:

CO1: Classify the elements into metals, non-metals and metalloids.

CO2: Explain the extraction of metals from ores, their mechanical properties and modification of properties by alloy formation.

CO3: Classify fuels and lubricants and apply them in different engineering applications.

CO4: Identify the polymeric materials, assess their properties and design suitable polymeric materials for current and future applications.

CO5: Apply effective methods for corrosion prevention

**DETAILED CONTENTS**

**UNIT 1**

**Atomic Structure, Periodic Table and Chemical Bonding**.

1.1 Bohr’s model of atom (qualitative treatment only), dual character of matter: derivation of de-Broglie’s equation, Heisenberg’s Principle of Uncertainty, modern concept of atomic structure: definition of orbitals, shapes of s, p and d-orbitals, quantum numbers and their significance. Electronic configuration: Aufbau and Pauli’s exclusion principles and Hund’s rule, electronic configuration of elements up to atomic number 30.

1.2 Modern Periodic law and Periodic table, classification of elements into s, p, d and f-blocks, metals, non-metals and metalloids (periodicity in properties excluded).

1.3 Chemical bonding: cause of bonding, ionic bond, covalent bond, and metallic bond (electron sea or gas model), Physical properties of ionic, covalent and metallic substances.

**UNIT II**

**Metals and Alloys**

2.1 Metals: mechanical properties of metals such as conductivity, elasticity, strength and stiffness, luster, hardness, toughness, ductility, malleability, brittleness, and impact resistance and their uses.

2.2 Definition of a mineral, ore, gangue, flux and slag. Metallurgy of iron from haematite using a blast furnace. Commercial varieties of iron.

2.3 Alloys: definition, necessity of making alloys, composition, properties and uses of duralumin and steel. Heat treatment of steel- normalizing, annealing, quenching, tempering.

**UNIT III**

**Water, Solutions, Acids and Bases**

3.1 Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v and v/v), normality, molarity and molality and ppm. Simple problems on solution preparation.

3.2 Arrhenius concept of acids and bases, strong and weak acids and bases, pH value of a solution and its significance, pH scale. Simple numerical problems on pH of acids and bases.

3.4 Hard and soft water, causes of hardness of water, types of hardness – temporary and permanent hardness, expression of hardness of water, ppm unit of hardness; disadvantages of hard water; removal of hardness: removal of temporary hardness by boiling and Clark’s method; removal of permanent hardness of water by Ion-Exchange method; boiler problems caused by hard water: scale and sludge formation, priming and foaming, caustic embrittlement; water sterilization by chlorine, UV radiation and RO.

**UNIT IV**

**Fuels and Lubricants**

4.1 Fuels: definition and classification of higher and lower calorific values, units of calorific value, characteristics of an ideal fuel. Petroleum: composition and refining of petroleum; gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG; relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel.

4.2 Lubricants- Functions and qualities of a good lubricant, classification of lubricants with examples; lubrication mechanism (brief idea only); physical properties (brief idea only) of a lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point.

**UNIT V**

**Polymers and Electrochemistry**

5.1 Polymers and Plastics: definition of polymer, classification, addition and condensation polymerization; preparation properties and uses of polythene, PVC, Nylon-66, Bakelite; definition of plastic, thermoplastics and thermosetting polymers; natural rubber and neoprene, other synthetic rubbers (names only).

5.2 Corrosion: definition, dry and wet corrosion, factors affecting rate of corrosion, methods of prevention of corrosion—hot dipping, metal cladding, cementation, quenching, cathodic protection methods

5.3 Introduction and application of nanotechnology: nano-materials and their classification, applications of nanotechnology in various engineering applications (brief).

**PRACTICAL EXERCISES**

1. To prepare standard solution of oxalic acid.

2. To dilute the given KMnO4 solution

3. To find out the strength in grams per litre of an unknown solution of sodium hydroxide using a standard (N/10) oxalic acid solution.

4. To find out the total alkalinity in parts per million (ppm) of a water sample with the help of a standard sulphuric acid solution.

5. To determine the total hardness of given water sample by EDTA method

6. To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water gravimetrically

7. To determine the pH of different solutions using a digital pH meter.

8. To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter.

9. To determine the viscosity of a lubricating oil using a Redwood viscometer

10. To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab.

**RECOMMENDED BOOKS**

1. Textbook of Chemistry for class XI and XII (part I & II) NCERT, Delhi, 2017-18.

2. C.N. R. Rao, Understanding Chemistry, Universities Press (India) Pvt. Ltd, 2011.

3. Jain & Jain, Engineering Chemistry, Dhanpat Rai and Sons; New Delhi, 2015.

4. Dr. G. H. Hugar& Prof A. N. Pathak, Applied Chemistry Laboratory Practices, Vol. I and Vol. II, NITTTR, Chandigarh, Publications, 2013-14.

5. Agnihotri, Rajesh, Chemistry for Engineers, Wiley India Pvt. Ltd, 2014.

6. Applied Chemistry by Usha Raju.

**SUGGESTED WEBSITES**

**1. www.chemguide.co.uk/atommenu.html (Atomic structure and chemical bonding)**

**2. www.visionlearning.com (Atomic structure and chemical bonding)**

**3. www.cheml.com (Atomic structure and chemical bonding)**

**4. https://www.wastewaterelearning.com/elearning/ (Water treatment)**

**5. www.capital-refractories.com (Metals, Alloys, Cement, and Refractory Materials)**

**6.** [**www.em-ea.org/guide%20books/book**](http://www.em-ea.org/guide%20books/book) **2/2.1%20fuels%20and%20combustion.pdf(Fuel and combustion)**

**INSTRUCTIONAL STRATEGY**

Teachers may take help of various models and charts while imparting instructions to make the concept clear. More emphasis should be laid on discussing and explaining practical applications of various chemical process and reactions. In addition, students should be encouraged or motivated to study those processes in more details, which may find practical application in their future professional career. This subject contains five units of equal weightage.

* 1. **ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT**

**(Mechanical)**

**L P**

**2 -**

**RATIONALE**

A diploma holder must have knowledge of different types of pollution caused due to industrial and construction activities so that he/she may help in balancing the ecosystem and controlling pollution by various control measures. The course is intended to provide a general concept in the dimensions of environmental pollution and disasters caused by nature beyond the human control as well as the disasters and environmental hazards induced by human activities with emphasis on disaster preparedness, response and recovery.

**COURSE OUTCOMES**

After undergoing the subject, the student will be able to:

CO1: Comprehend the importance of sustainable ecosystem.

CO2: Clarify interdisciplinary nature of environmental issues.

CO3: Describe corrective measures for the abatement of pollution.

CO4: Identify the role of non-conventional energy resources in environmental protection.

CO5: Recognize various types of disasters.

**DETAILED CONTENTS**

**UNIT I**

**Introduction**

1.1 Basics of ecology, eco system- concept, and sustainable development, Sources, advantages, disadvantages of renewable and nonrenewable energy.

1.2 Rain water harvesting

1.3 Deforestation – its effects & control measures

**UNIT II**

**Air and Noise Pollution**

2.1 Air Pollution: Source of air pollution. Effect of air pollution on human health, economy, Air pollution control methods.

2.2 Noise Pollution: Source of noise pollution, Unit of noise, Effect of noise pollution, Acceptable noise level, Different method of minimizing noise pollution.

**UNIT III**

**Water and Soil Pollution**

3.1 Water Pollution: Impurities in water, Cause of water pollution, Source of water pollution. Effect of water pollution on human health, Concept of DO, BOD, COD. Prevention of water pollution- Water treatment processes, Sewage treatment. Water quality standard.

3.2 Soil Pollution :Sources of soil pollution, Effects and Control of soil pollution, Types of Solid waste- House hold, Industrial, Agricultural, Biomedical, Disposal of solid waste, Solid waste management E-waste, E – waste management

**UNIT IV**

**Impact of Energy Usage on Environment**

Global Warming, Green House Effect, Depletion of Ozone Layer, Acid Rain. Eco-friendly Material, Recycling of Material, Concept of Green Buildings, Concept of Carbon Credit & Carbon footprint.

**UNIT V**

**Disaster Management**

A. Different Types of Disaster:

Natural Disaster: such as Flood, Cyclone, Earthquakes and Landslides etc.Man-made Disaster: such as Fire, Industrial Pollution, Nuclear Disaster, Biological Disasters, Accidents (Air, Sea Rail & Road), Structural failures(Building and Bridge), War & Terrorism etc.

B. Disaster Preparedness:

Disaster Preparedness Plan Prediction, Early Warnings and Safety Measures of Disaster Psychological response and Management (Trauma, Stress, Rumour and Panic)

**RECOMMENDED BOOKS**

**1.**  S.C. Sharma & M.P. Poonia, “Environmental Studies”, Khanna Publishing House, New Delhi.

2. BR Sharma, “Environmental and Pollution Awareness”, Satya Prakashan, New Delhi.

3. Dr. RK Khitoliya, “Environmental Pollution”, S Chand Publishing, New Delhi.

4. Erach Bharucha, “Environmental Studies”, University Press (India) Private Ltd.,Hyderabad.

5. Suresh K Dhamija, “Environmental Engineering and Management”, S K Kataria and Sons, New Delhi.

6. E-books/e-tools/relevant software to be used as recommended by AICTE/BTE/NITTTR,Chandigarh.

7. Dr. Mrinalini Pandey, “Disaster Management”, Wiley India Pvt. Ltd.

1. Tushar Bhattacharya, “Disaster Science and Management”, McGraw Hill Education (India) Pvt. Ltd.

**INSTRUCTIONAL STRATEGY**

In addition to theoretical instructions, different activities pertaining to Environmental Studies and Disaster Management like expert lectures, seminars, visits etc. may also be organized. This subject contains five units of equal weightage.

**PERFORMA OF LESSON PLAN**

**NAME OF TEACHER: Parul, Anshu Chugh**

DISCIPLINE:

SEMESTER: 6TH

SUBJECT: SOFT SKILLS

LESSON PLAN DURATION: 16 WEEKS

WORK LOAD PER WEEK PRACTICAL......

|  |  |  |
| --- | --- | --- |
| WEEK | PRACTICAL | |
| PRACTICAL DAY | TOPIC |
| 1 | 1 | Introduction to Soft Skills |
| 2 | Self Introduction |
| 2 | 1 | Presentation skill |
| 2 | Classification of Presentation. |
| 3 | 1 | Features of Good Presentation. |
| 2 | Advantages of Good Presentation and Activity |
| 4 | 1 | Concept of Time Management |
| 2 | Techniques of Time Management |
| 5 | 1 | Importance of Time Management |
| 2 | Stress Management |
| 6 | 1 | Symptoms or Signs of Stress |
| 2 | Types of Stress |
| 7 | 1 | Stress Resolution Techniques |
| 2 | Activity regarding Develop Habits to overcome Stress |
| 8 | 1 | Problem Solving |
| 2 | Types of Problem |
| 9 | 1 | Problem Solving Techniques |
| 2 | Approaches for Problem Solving |
| 10 | 1 | Activity regarding Face the Problem with Confidence |
| 2 | Career Opportunities – Current and future |
| 11 | 1 | Career Opportunities for students of Technical field |
| 2 | Exhibit attributes required to appear for an interview |
| 12 | 1 | Entrepreneurial Skills |
| 2 | Theories of Entrepreneurship |
| 13 | 1 | Successful Stories of Entrepreneurs and Activity |
| 2 | Quality and quality tools used in industry |
| 14 | 1 | Motivate the Students to take part in sports , NCC / NSS and cultural Event |
| 2 | Activity Related to Values of Games |
| 15 | 1 | Group Discussion |
| 2 | Role – Play Activity |
| 16 | 1 | Practice |
| 2 | Practice |

**PERFORMA OF LESSON PLAN**

**NAME OF TEACHER: Krishan, Kuldeep Kaushik**

DISCIPLINE:

SEMESTER: 6TH

SUBJECT: SOFT SKILLS

LESSON PLAN DURATION: 16 WEEKS

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