# Integral University, Lucknow

| Effective from Session: 2024-25 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DMA-201 | **Title of the Course** | APPLIED MATHEMATICS-II | **L** | **T** | **P** | **C** |
| **Year** | I$^{ST}$ | **Semester** | II$^{nd}$ | **03** | **01** | **00** | **-** |
| **Pre-Requisite** | DMA-201 | **Co-requisite** | NA | | | | |
| **Course Objectives** | To know the basic concepts of Mathematics with their Applications in Engineering. | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | Definite and Indefinite integral knowledge makes students wide in solving problems related to big summations and areas related problems. |
| **CO2** | Applications of Integration will lead students to get a good knowledge of finding areas, volume etc. |
| **CO3** | Some different rules like Newton-Cote's Quadrature formula, Trapezoidal rule, Simpson's 1/3rd rule and 3/8th rule, Students will be able to solve big Integral problems in a very easy pattern. |
| **CO4** | 2D Coordinate Geometry has application in the field of construction. The sketch of a building is a pure geometry. It is also used for finding the distance between places and in geography also it has many applications. It is also used in Astrophysics to find the distance between planets |
| **CO5** | Three-dimensional geometry is used in various fields like in computer graphics, biotechnology and medical sciences and in different projects also. |

| **Unit No.** | **Title of the Unit** | | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | i). Integral Calculus-I<br>ii). Indefinite Integral | **Integral Calculus – I:**<br>Definition of Integration (anti-derivative), Integration of standard functions. Rule of integration (Integration of sum, difference and Scalar multiplication).<br>**Indefinite Integral:**<br>Integration by substitution, Integration by parts, Integration by partial fraction. | 07 | 1 |
| 2 | i). Integral Calculus -II<br>ii). Application of Integral Calculus | **Integral Calculus - II:**<br>**Definite Integral:** Definition of definite integral, properties and evaluation of definite integral.<br>**Application of Integral Calculus:** Finding areas bounded by sample curves. | 08 | 2 |
| 3 | i). Numerical Integral & Error | **Numerical Integration & Error:** Introduction, Newton-Cote's Quadrature formula, Trapezoidal rule, Simpson's 1/3rd rule and 3/8th rule. Concept of error for simple function. | 08 | 3 |
| 4 | i). Coordinate Geometry (2Dimention) | **Coordinate Geometry (2-Dimension):** Circle, Equation of circle in standard form. Centre - Radius form, Diameter form, Two intercept form. | 08 | 4 |
| 5 | i). Coordinate Geometry (3-Dimention) | **Co-ordinate Geometry (3 Dimension):** Straight lines and planes in space, Distance between two points in space, direction cosine and direction ratios, Finding equation of a straight line (without proof). | 09 | 5 |

**References Books:**


1. Applied Mathematics: Kailash Sinha, Meerut publication.
2. Applied Mathematics: P. K. Gupta, Asian Publication.
3. Applied Mathematics: H. R. Loothara, Bharat Bharti Publication.
4. Mathematics for Polytechnic: S.P. Deshpande, Pune Vidyarthi Griha.


**e-Learning Source:**

https://www.youtube.com/watch?v=syLIPtxjN0E&list=PLn78sdsv0QoXBxWmyGp5SQdg-F_AlyB05&pp=iAQB

https://www.youtube.com/watch?v=rBNQ0r7CN2c&list=PLn78sdsv0QoXUdre4aCAobj3cxACkNeLL&pp=iAQB

| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 1 | 3 | -- | 1 | -- | -- | -- | -- | -- | -- | 2 | - |
| **CO2** | 1 | 3 | 1 | 1 | 2 | -- | -- | -- | -- | -- | -- | 2 | 1 |
| **CO3** | -- | 1 | -- | 2 | 3 | -- | -- | -- | -- | -- | -- | 3 | -- |
| **CO4** | 2 | 2 | 2 | 1 | -- | -- | -- | -- | -- | -- | -- | - | 2 |
| **CO5** | 2 | 1 | 1 | -- | 1 | -- | -- | -- | -- | -- | -- | - | 1 |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

| **Name & Sign of Program Coordinator** | **Sign & Seal of HoD** |
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| Effective from Session: 2010 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DPH-201 | **Title of the Course** | Applied Physics-II | **L** | **T** | **P** | **C** |
| **Year** | I | **Semester** | II | **3** | **1** | **0** | |
| **Pre-Requisite** | None | **Co-requisite** | None | | | | |
| **Course Objectives** | To equip learners with the foundational concepts of units, dimensions, dimensional analysis, measurement accuracy, and vector operations, enabling them to analyze physical equations, perform unit conversions, estimate errors, and apply vector algebra in solving scientific and engineering problems. | | | | | | |

| Course Outcomes | |
|---|---|
| **CO1** | Students learn to analysis to effect of building acoustic condition. |
| **CO2** | Students learn about the application of ultrasound in various fields like SONAR, medical and research work and sound signal etc. |
| **CO3** | The student learns to introduce and overview of optical fiber and process of transmission of signal and application of various field. |
| **CO4** | Students learn to investigate broken telegraph wire with the help of post office box. |
| **CO5** | Students learn to simplify complicated circuits by using Kirchhoff's law. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| Unit-1 | **Application of Sound Waves** | **Acoustics**: Standing waves, Closed and Open organ pipes, Resonance, End correction. Definition of pitch, loudness, quality and intensity of sound waves. Echo and reverberation and reverberation time. Sabine's formula, Control of reverberation time (problems on reverberation time). Acoustics of buildings, defects and remedy.<br>**Ultrasonics:** Generation, Magnetostriction, Piezoelectric effect, Application in new technology | 6 | CO-1 |
| Unit-2 | **Fiber Optics** | Quantum nature of light, Coherence (Spatial and temporal), Duality of wave and particle, Concept of Interference, Biprism, Fraunhoffer single slit diffraction, grating, Resolving and dispersive power, Elementary concept of polarization. Critical angle, Total internal reflection, Principle of fiber optics, Optical fiber, Pulse dispersion in step-index fibers, Graded index fiber, Single mode fiber, Optical sensor | 8 | CO-2 |
| Unit-3 | **D.C. Circuits, Dielectrics** | Principle of Wheat Stone bridge and application of this principle in measurement of resistance (Meter bridge and Post Office Box); potentiometer, Kirchhoff's Law and their simple application. Principle of Carey-Foster's bridge. Electric potential, potential energy, Energy of a charged capacitor. Charging and discharging of capacitors.<br>Electric dipole; effect of electric field on dielectrics, polarization. Magnetic Fields & Materials: Dia, Para and Ferromagnetism, Ferrites, Hysteresis, Hysteresis curve of a ferro magnetic materials and their uses, Basic idea of super conductivity. | 8 | CO-3 |
| Unit-4 | **Semiconductor Physics, Nuclear Physics** | classification of solids into conductors, insulators and semiconductors based on energy band structure. Intrinsic and extrinsic semiconductors, Electrons and holes as charge carriers in semiconductors, Effect of temperature in conduction in semiconductors, P-type and N-type semiconductors, P-N junction formation, barrier voltage, Forward and reverse biasing of a junction diode.<br>Continuous and characteristics of X-rays, Properties & applications of X-rays.<br>Radioactivity, Nuclear stability, Radioactive emission, radiation hazards, nuclear fission and fusion, nuclear reactors and their application, Mass-energy relation, atomic mass unit, Mass defect and binding energy. | 10 | CO-4 |
| Unit-5 | **Lasers and their Applications, Non-conventional energy resources** | Absorption and Emission of energy by atom, Spontaneous and Stimulated Emission, Population inversion. Main components of laser and types of lasers, Ruby Laser, He-Ne laser and their applications.<br>Wind energy: Introduction, scope and significance, measurement of wind velocity by anemometer, general principle of windmill, Indian wind energy program.<br>Solar energy: Solar radiation and potentiality of solar radiation in India, unit of solar radiation. Biofuel and Gobar gas plants Uses of solar energy: Solar Cooker, solar water heater, solar photo-voltaic cells, solar energy collector, Modern applications in technology. | 8 | CO-5 |

**References Books:**


1. Nootan Physics: Kumar & Mittal
2. Applied Physics: P.K. Gupta.
3. Pradeep Fundamental: Gogia & Gomber.
4. Applied Physics: P.S. Kushwaha.


**e-Learning Source:**

1. https://www.youtube.com/watch?v=2BzQYDwZeZk&list=PL5zwY2E7i60XzRPOrKzvSzjvxnyK6jQB3
2. https://www.youtube.com/watch?v=IEju3AT1olk&list=PLgwJf8NK-2e4iGfcV1Jz81dF6sXk5LlT3

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | | | | | | | | | | | 2 | | |
| **CO2** | 2 | | | | | | | | | | 1 | 2 | | |
| **CO3** | 2 | | | | 2 | 1 | | | | | | 2 | | |
| **CO4** | 1 | | | | 2 | | 3 | | | | | 1 | | |
| **CO5** | 2 | 2 | | | | | | | | | | 2 | 2 | |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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| **Name & Sign of Program Coordinator** | **Sign & Seal of HoD** |

# Integral University, Lucknow

| Effective from Session: 2010 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DCH-201 | **Title of the Course** | Applied Chemistry-II | **L** | **T** | **P** | **C** |
| **Year** | I | **Semester** | II | **3** | **1** | **0** | **0** |
| **Pre-Requisite** | None | **Co-requisite** | None | | | | |
| **Course Objectives** | 1. To understand all the chemical reactions, principle and theory related to topics<br>2. To provide examples and unsolved problems as much as possible<br>3. To provide example related to industrial as well as domestic proposes | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | To acquire the foundational knowledge needed to understand the properties, combustion behaviors, and potential impacts of different fuels. |
| **CO2** | To understand all, disperse systems used in pharmaceutical and other paint industry. |
| **CO3** | To provide knowledge about the nature of compounds and the nature of bonds of organic compound as well as the possibility of chemical reaction. |
| **CO4** | To provide the fundamental understanding needed to design and optimize industrial Process |
| **CO5** | To understand the vital material which is used in a range of applications across various industries. Understand manufacturing process to create sustainable material. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| Unit-1 | **Fuels** | Definition, its classification, high and low calorific value. Determination of calorific value of solid and liquid fuels by Bomb calorimeter.<br>Liquid fuel- Petroleum and its refining, distillates of petroleum (Kerosene oil, Diesel and Petrol), Benzol and power alcohol. Knocking, Anti-knocking agents, Octane number and Cetane number.<br>Cracking and its type, Gasoline from hydrogenation of coal (Bergius process and Fischer Tropsch's process) Gaseous Fuel- Coal gas, Oil gas, Water gas, Producer gas, Biogas, LPG and CNG. Numerical problems based on topics. | 10 | CO1 |
| Unit-2 | **Colloidal State of Matter Lubricants** | Concept of colloidal and its types, different system of colloids, dispersed phase and dispersion medium. Methods of preparation of colloidal solutions, Dialysis and electrodialysis. Properties of colloidal solution with special reference to absorption, Brownian movement, Tyndal effect, Electrophoresis and Coagulation. Relative stability of hydrophilic and hydrophobic colloids. Protection and protective colloids. Emulsion, types, preparation, properties and uses. Application of colloids chemistry in different industries. | 06 | CO2 |
| Unit-3 | **Hydrocarbons** | Definition, classification, necessity and various kinds of lubricants. Function and mechanism of action of lubricants and examples. Properties of lubricants, importance of additive compounds in lubricants, Synthetic lubricants and cutting fluids. Industrial application, its function in bearing. | 10 | CO3 |
| Unit-4 | **Organic Reactions and Mechanism:** | A. Classification and IUPAC nomenclature of organic compounds homologous series (Functional Groups). B. Preparation, properties and uses of Ethane, Ethene, Ethyne (Acetylene), Benzene and Toluene.<br>Fundamental aspects- A. Electrophiles and nucleophiles, Reaction intermediates, Free radicals, Carbocation, Carbanion. B. Inductive effect, Mesomeric effect, Electrometric effect. Mechanism- A. Mechanism of addition reaction (Markovnikov's Rule, Cyanohydrin and Peroxide effect). B. Mechanism of substitution reactions; (Nucleophilic) hydrolysis of alkyl halide, electrophilic substitution halogenations, Sulphonation, Nitration and Friedel- Craft reaction. C. Mechanism of Elimination reaction- Dehydration of primary alcohol, Dehydrohalogenation of primary alkyl halide. | 07 | CO4 |
| Unit-5 | **Polymers and Synthetic Materials** | Polymers and their classification. Average degree of polymerization, Average molecular weight, Free radical polymerisation (Mechanism).<br>Thermosetting and thermoplastic<br>A. Addition polymers and their industrial applications- Polythene, Polystyrene, PVA, PVC, PAN, PMMA, Buna-S, Buna-N, Teflon.<br>B. Condensation polymers and their industrial applications- Nylon 6, Nylon 6,6, Bakelite, Melamine formaldehyde, Urea formaldehyde, Terylene or Dacron, Polyurethanes. General concept of Bio polymers, Biodegradable polymers and Inorganic polymers (Silicon).<br>Synthetic Materials- A. Introduction- Fats and Oils B. Saponification of fats and oils, Manufacturing of soap C. Synthetic detergents, types of detergents and its manufacturing. Explosives: TNT, RDX and Dynamite, Paint and Varnish. | 07 | CO5 |

# Integral University, Lucknow

| **References Books:** |
|---|
| 1. Applied Chemistry: R. S. Katiyar and J. P. Chaudhary |
| 2. Applied Chemistry: Rakesh Kapoor |
| 3. Principles of general and inorganic chemistry: O. P. Tandon |
| 4. Engineering Chemistry: S. Chandra |
| 5. Applied Chemistry: M. Gupta |
| **e-Learning Source:** |
| https://drive.google.com/file/d/176P2RihIzLCSWmWqeMf5W1ja5uYcqRXn/view?usp=drive_link<br>https://drive.google.com/file/d/1HkrXSpQw7_Y5FZPf8iq0T92DRyuGrms3/view?usp=drive_link<br>https://drive.google.com/file/d/1lsZHgt7nlIdB0iReCbTaP53JZjgzjOZ3/view?usp=drive_link |
| https://drive.google.com/file/d/176OiA-haF34K1Bzg_xA2PwSXkwGb-FMD/view?usp=drive_link |

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 03 | - | 01 | - | - | - | 01 | | | | | 1 | |
| **CO2** | 03 | - | - | - | - | - | - | | | | | | |
| **CO3** | 03 | - | 01 | - | - | - | 02 | | | | | | 2 |
| **CO4** | 03 | 01 | 02 | - | - | - | 02 | | | | | 2 | 2 |
| **CO5** | 03 | - | - | - | - | - | 02 | | | | | | 3 |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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| **Name & Sign of Program Coordinator** | **Sign & Seal of HoD** |

# Integral University, Lucknow

| Effective from Session: 2025-26 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DCE-201 | **Title of the Course** | BUILDING MATERIALS- II | **L** | **T** | **P** | **C** |
| **Year** | I | **Semester** | II | **3** | **1** | **0** | |
| **Pre-Requisite** | DCE-201 | **Co-requisite** | NA | | | | |
| **Course Objectives** | To understand properties and uses of different building materials. | | | | | | |

| Course Outcomes | |
|---|---|
| **CO1** | The course provides basic knowledge of the properties of essential materials, especially Timber, Steel, concrete and wood, heat insulating materials, Glass, Plastics and composites. |
| **CO2** | The candidate will learn the basic theory about important building materials. |
| **CO3** | Show the relationship between the choice of materials, physical properties and environmental concerns. |
| **CO4** | Assess material properties, mechanical tests and quality control tests for wood and wood products, concrete, masonry, glass, plastics, iron and steel, aluminum and aluminum products, paints and protective coatings, bituminous products, gypsum products, resilient flooring. |
| **CO5** | To identify the methods for preservation of timber and metals. |

| Unit No. | Title of the Unit | | Contact Hrs | Mapped CO |
|---|---|---|---|---|
| **UNIT-I** | **Timber and wood-based Products** | Classification of trees. Cross-section of an exogenous tree and explanation of terms. Identification of different types of timber: teak, chir, shisham, sal, mango, deodar, kail etc. Market forms of converted timber as per IS. Seasoning of timber: purpose, types of seasoning. air seasoning, water seasoning, kiln seasoning, chemical seasoning, Solar seasoning. Defects in timber. Decay in timber. Preservation of timber and methods of treatment. Properties of good timber. Common structural timbers in India, their availability, and uses. Plywood, veneers; manufacture of plywood, uses of plywood. Other wood-based products and their brief description, manufacture and uses. Laminated boards: block boards, fiber boards, resistant board, hardboard, plastic coated finishes, water- and fire-resistant plywood, PVC boards. | 10 | CO-1, CO-5 |
| **UNIT-II** | **Paints** | Various types of paints. Constituents of oil paints, their functions and properties. Cement paints, their properties and uses, Varnish and polish: types, properties and uses. Lacquers and enamels: their properties and uses. Trade names of different products. | 07 | CO-2, CO-3 |
| **UNIT-III** | **Insulating Materials** | Properties, uses and requirements of heat and sound insulating materials. Properties and uses of cork, rock wool, glass wool, concrete, aluminum foil, asbestos sheets for ceiling, commercial names of different insulating materials. | 07 | CO-2 |
| **UNIT-IV** | **Glass** | Types of glasses and their properties, Sheet glass, plate glass, frosted glass, wired glass, fiber glass bullet resisting glass, colored glass and glass wool Commercial sizes, forms and their uses. | 09 | CO-4 |
| **UNIT-V** | **Water proofing materials** | Properties & commercial trade names. Exposure to non-conventional & waste by-products, Fly ash, Stone Cladding and other finishing materials. | 07 | CO-2, CO-4 |

**References Books:**


1. Building Construction: Jha J & Sinha, S.K.
2. A Textbook of Building Construction: Arora, S.P. & Bindra, S.P.
3. Building Materials: S.K. Duggal


**e-Learning Source:**

https://youtu.be/hekPE3PZGTg

https://youtu.be/g2K6PXxtyB4

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 1 | | | | | | 2 | | | | 1 | |
| **CO2** | 1 | 3 | | | 2 | | | | | | | 2 | |
| **CO3** | 1 | | 2 | | | 3 | | | | | | 2 | |
| **CO4** | | | 2 | 3 | 1 | | | | | | | | 2 |
| **CO5** | | | 3 | 2 | | 1 | 2 | | | | | | 2 |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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| **Name & Sign of Program Coordinator** | **Sign & Seal of HoD** |

# Integral University, Lucknow

| Effective from Session: 2024-25 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DAM-201 | **Title of the Course** | APPLIED MECHANICS-II | **L** | **T** | **P** | **C** |
| **Year** | I | **Semester** | II | **3** | **1** | **0** | |
| **Pre-Requisite** | 10th | **Co-requisite** | None | | | | |
| **Course Objectives** | 1. The subject Applied Mechanics deals with basic concepts of friction, center of gravity, and equilibrium of a body.<br>2. The subject Applied Mechanics deals with the basic concept of simple machines and their working. | | | | | | |

| Course Outcomes | |
|---|---|
| **CO1** | To calculate the co-efficient of friction for different types of surfaces. |
| **CO2** | Determine the centroid/centre of gravity of plain and composite lamina and solid bodies. |
| **CO3** | Calculate the least force required to maintain equilibrium on an inclined plane. |
| **CO4** | Determine velocity ratio, mechanical advantage and efficiency of simple machines |
| **CO5** | To understand the basic concept of simple machines and it's working. |

| Unit No. | Title of the Unit | Content of unit | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| I | Friction | Definition and concept of friction, types of friction, force of friction, Laws of static friction, coefficient of friction, angle of friction, angle of repose,cone of friction. | 6 | CO1 |
| II | Centre of Gravity | Concept, definition of centroid of plain figures and centre of gravity ofsymmetrical solid bodies. Determination of centroid of plain and composite lamina using moment methodonly, centroid of bodies with removed portion. Determination of center of gravity of solid bodies - cone, cylinder, hemisphere and sphere; composite bodies and bodies with portion removed [Simple problems on the above topics]. | 10 | CO2 |
| III | Equilibrium of a Body | Equilibrium of a body lying on a horizontal plane, equilibrium of a body lying ona rough inclined plane. Calculation of least force required to maintain equilibrium of a body on a rough inclined plane subjected to a force:<br>(a) Acting along the inclined plane Horizontally<br>(b) At some angle with the inclined plane | 8 | CO3 |
| IV | Machines | Definition of effort, velocity ratio, mechanical advantage and efficiency of amachine and their relationship, law of machines Simple and compound machine (Examples). Definition of ideal machine, reversible and self-locking machine. Effort lost in friction, Load lost in friction, determination of maximum mechanicaladvantage and maximum efficiency. | 6 | CO4 |
| V | Working of Simple Machines | System of pulleys (first, second, third system of pulleys), determination of velocity ratio, mechanical advantage and efficiency. Working principle and application of wheel and axle, Weston's Differential PulleyBlock, simple screw jack, worm and worm wheel, single and double winch crab. Expression for their velocity ratio and field of their application[Simple problems on the above topics] | 10 | CO5 |

**References Books:**


1. Applied Mechanics & Strength of Material : R.S. Khurmi, S.Chand Publication
2. Applied Mechanics: Hemendra Dutt Gupta, Navbharat Publication


**e-Learning Source:**

https://www.youtube.com/watch?v=nGfVTNfNwnk

https://www.youtube.com/watch?v=TnWBAnkCDuc&list=PLq7jO-L_k0yUk2tfPwhea9asGRBXcUEpL

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 1 | 3 | 1 | 2 | - | - | - | - | - | - | - | 2 | 1 |
| **CO2** | 1 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 | 2 |
| **CO3** | 1 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 | 2 |
| **CO4** | 3 | 1 | 1 | 3 | - | - | - | - | - | - | - | 2 | 2 |
| **CO5** | 3 | 1 | 1 | 3 | - | - | - | - | - | - | - | 2 | 2 |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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| **Name & Sign of Program Coordinator** | **Sign & Seal of HoD** |

# Integral University, Lucknow

| Effective from Session: 2010-11 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DPC- 201 | **Title of the Course** | PROFESSIONAL COMMUNICATION | **L** | **T** | **P** | **C** |
| **Year** | FIRST | **Semester** | SECOND | | **T** | | |
| **Pre-Requisite** | | **Co-requisite** | | | | | |
| **Course Objectives** | **1.** Enhance Verbal Communication Skills.<br>**2.** Master Written Communication.<br>**3.** Cultivate Interpersonal Skills.<br>**4.** Develop Professional Etiquette Utilize Communication Technologies. | | | | | | |

| Course Outcomes | |
|---|---|
| **CO1** | Introduction of the concept of communication, types of skills, modern tools, etc... |
| **CO2** | The CO of this unit is to make an inquiry about people, products, price etc. with the expansion of business operations of a business, and the importance of business letter is also increasing. To take the right decisions: Taking the right decisions require accurate information. |
| **CO3** | The CO of this unit is to control sentence-level error (grammar, punctuation, and spelling). Its outcome is to employ techniques of active reading, critical reading, and informal reading response for inquiry, learning, and thinking. |
| **CO4** | Learning objectives focus on student performance. Action verbs that are specific, such as list, describe report, compare, demonstrate, and analyze, should state the behaviors students will be expected to perform in Hindi |
| **CO5** | The conclusion of this subject is to increase the student's English communication skills by Improving fluency through regular practice and speaking drills. Understanding of basic grammar structures like nouns, verbs and adjectives through class reading and speaking tasks. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | Communication in English | Concept of communication, importance of effective communication, types of communication, formal and informal, verbal and nonverbal, spoken and written, Techniques of communication, Listening and reading, writing and speaking, Barriers to communication- Modern tools of communication Fax, e-mail, Telephone, telegram, etc., Techniques for clear, concise, correct and coherent writing, Difference between technical writing and general writing. | 8 | CO-1 |
| 2 | Letters | Kinds of letters: Official, demi-official, unofficial, enquiry letter, quotation, tender and order giving letters. Application for a job, Resume, complaint letter and adjustment letter. Report writing, Note making and minutes writing. | 8 | CO-2 |
| 3 | Grammar | Transformation of sentences, synthesis, Preposition, Articles, Idioms and Phrases, One word substitution, Abbreviations. Tenses, Active and Passive voice. Composition on narrative, descriptive, imaginative, argumentative, discussion and factual topics. | 8 | CO-3 |
| 4 | Spoken English | Phonemes (Speech sound), Consonant sounds, vowels sounds and diphthongs, Phonetic transcription, IPA, word stress and Intonation. Development of comprehension and knowledge of English through the study of text material and language exercises based on the prescribed textbook of English. | 8 | CO-4 |
| 5 | Letter writing in Hindi | Kinds of letters: Official, demi-official, unofficial, enquiry letter, quotation, tender and order giving letters, Application for a job. | 8 | CO-5 |

**References Books:**


Dr. R.P. Chauhan, Asian Publishers, Muzaffarnagar

S.V. Singh & M. S. Verma: Bharat Bharat Prakashan, Meerut.

R. Thakur & M. Singh, Meerut Publication.


**e-Learning Source:**

https://www.bbau.ac.in/Docs/FoundationCourse/TM/AECC105/Lecture%20Types%20&%20Modes%20of%20Communication.pdf

https://www.uou.ac.in/sites/default/files/slm/BHMAECC-II.pdf

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | | | | | | | | | | | 3 |
| **CO2** | 2 | 2 | | | | | | | | | | 1 | |
| **CO3** | 1 | 1 | | | | | | | | | | | |
| **CO4** | 2 | 2 | | | | | | | | | | 2 | 2 |
| **CO5** | 3 | 3 | | | | | | | | | | | 3 |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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| **Name & Sign of Program Coordinator** | **Sign & Seal of HoD** |

| Effective from Session: 2010 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DPH-251 | **Title of the Course** | Applied Physics Lab. | **L** | **T** | **P** | **C** |
| **Year** | I | **Semester** | II | **0** | **0** | **3** | |
| **Pre-Requisite** | DPH-251 | **Co-requisite** | NA | | | | |
| **Course Objectives** | "To develop practical skills and analytical understanding of fundamental physics concepts through experimental determination of physical properties and constants, such as gravitational acceleration, surface tension, viscosity, modulus of rigidity, electrical and mechanical properties, and wave behavior." | | | | | | |

| Course Outcomes | |
|---|---|
| **CO1** | Identify the different instruments for linear measurement. |
| **CO2** | Identify the different instruments for angular measurement. |
| **CO3** | Identify the different instruments for levelling. |
| **CO4** | Record and observing necessary observation with the survey instruments. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | Experiment No.1 | Determination of 'g' using simple pendulum. | 2 | CO1 |
| 2 | Experiment No.2 | To find the surface Tension of water by the method of capillary rise. | 2 | CO1 |
| 3 | Experiment No.3 | To determine the frequency of A.C. mains by using a sonometer and a horseshoe magnet. | 2 | CO1 |
| 4 | Experiment No.4 | To determine the value of modulus of rigidity of given material of a wire by statical method using Barton's apparatus. | 2 | CO1 |
| 5 | Experiment No.5 | Determination of coefficient of viscosity of water by capillary flow (Poiseuilles method). | 2 | CO2 |
| 6 | Experiment No.6 | To determine the height of a tower by Sextant. | 2 | CO3 |
| 7 | Experiment No.7 | To determine the moment of Inertia of a flywheel. | 2 | CO3 |
| 8 | Experiment No.8 | Determination of velocity of sound by resonance tube. | 2 | CO3 |
| 9 | Experiment No.9 | Determination of resistivity of a given wire by Post Office Box. | 2 | CO3 |
| 10 | Experiment No.10 | By using Potentiometer, determination of (i) E1/E2 (ii) Internal resistance of given cell. | 2 | CO4 |
| 11 | Experiment No.11 | Determination of coefficient of friction on a horizontal plane. | 2 | CO1 |
| 12 | Experiment No.12 | Determination of viscosity coefficient of a lubricant by Stoke's law | 2 | CO4 |
| 13 | Experiment No.13 | Determination of Spring Constant. | 2 | CO4 |
| 14 | Experiment No.14 | Verification of Kirchoff's laws. | 2 | CO2 |
| 15 | Experiment No.15 | To draw the characteristics of a p-n junction diode. | 2 | CO3 |

**References Books:**

1. Lab Manual.

**e-Learning Source:**

1. https://www.youtube.com/watch?v=xliGyZwEUG8&list=PLbOkUmjwMtHv5l3ZWZ9x01n3i0n4z0WJQ

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PO13 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | | | | 3 | | 2 | | | | 3 | | 2 | | | | |
| **CO2** | | | | 3 | | 2 | | | | 3 | | 2 | | 1 | | 2 |
| **CO3** | | | | 3 | | 2 | | | | 3 | | 2 | | | 2 | |
| **CO4** | | | | 3 | | 2 | | | | 3 | | 2 | | 2 | | 3 |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

| Name & Sign of Program Coordinator | Sign & Seal of HoD |
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| Effective from Session: 2010 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DCE-251 | **Title of the Course** | Building Materials Lab. | **L** | **T** | **P** | **C** |
| **Year** | I | **Semester** | II | **0** | **0** | **3** | |
| **Pre-Requisite** | DCE-251 | **Co-requisite** | NA | | | | |
| **Course Objectives** | The objective of the Building Material Lab is to provide students with hands-on experience in testing, analyzing, and evaluating various construction materials | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | Able to design and test the materials either in the laboratory or in the field before their actual use at the site. |
| **CO2** | Able to Impart the knowledge about the characteristics, sources and defects in various materials used for construction purposes. |
| **CO3** | Able to attain the knowledge of different components of building, their classification, materials and methods of construction and causes of their failures. |
| **CO4** | To examine and identify different types of stones and aggregates i.e. the Visual identification of these materials' specimen present in the Lab. |
| **CO5** | Identification of timbers i.e. the visual identification of specimen of different Exogenous Trees. |

| **Unit No.** | **Title of the Unit** | | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| **1** | Experiment No.1 | Identification of different types of stones and aggregates (visual identification). | 3 | CO1 |
| **2** | Experiment No.2 | Identification of timbers: teak, sal, chir, shisum, siras, deodar, kail | 3 | CO1 |
| **3** | Experiment No.3 | To determine normal consistency of cement. | 3 | CO1 |
| **4** | Experiment No.4 | To determine setting time (initial and final) of cement. | 3 | CO2 |
| **5** | Experiment No.5 | To determine fineness of given sample of cement. | 3 | CO2 |
| **6** | Experiment No.6 | To determine compressive strength of bricks. | 3 | CO3 |
| **7** | Experiment No.7 | To determine water absorption of bricks | 3 | CO3 |
| **8** | Experiment No.8 | To determine soundness of cement. | 3 | CO3 |
| **9** | Experiment No.9 | To identify hydraulic & fat lime. | 3 | CO4 |
| **10** | Experiment No.10 | Identification of different types of stones and aggregates (visual identification). | 3 | CO4 |

**References Books:**

1. Lab Manual.

**e-Learning Source:**

1. https://www.youtube.com/watch?v=fysIAYNBoe4&list=PLk7ptZcI9vmhBh7evUtxAbHe3Ojs_099H

| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | | | 3 | | | | | 2 | 1 | | | | |
| **CO2** | 3 | | 3 | 2 | | 1 | | | | | | 1 | | 2 |
| **CO3** | 3 | | | 1 | 2 | | | | 3 | | | | 2 | |
| **CO4** | | | 2 | 3 | | | | 3 | | | 1 | 2 | | 3 |
| **CO5** | 2 | | 1 | 3 | | 1 | 3 | | | | | | | |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

| **Name & Sign of Program Coordinator** | **Sign & Seal of HoD** |
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# Integral University, Lucknow

| Effective from Session: 2010 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DAM-251 | **Title of the Course** | APPLIED MECHANICS LAB | **L** | **T** | **P** | **C** |
| **Year** | 1 | **Semester** | 2 | | | **2** | |
| **Pre-Requisite** | 10 th pass | **Co-requisite** | | | | | |
| **Course Objectives** | To provide a quality education for students entering the mechanical engineering profession or Seeking careers in related fields. | | | | | | |

| Course Outcomes | |
|---|---|
| **CO1** | Learn basics of machine mechanics. |
| **CO2** | Students learn how to operate different lifting machines. |
| **CO3** | Students learn how to calculate the mechanical advantage of different lifting machines. |
| **CO4** | Learn basics of principle of moments, resolution of forces and coefficient friction. |
| **CO5** | Students learn about the efficiency of different machines. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|---|---|---|---|---|
| 1 | Law of Polygon | To verify the law of Polygon of forces | 2 | 3 |
| 2 | Law of parallelogram and triangle | To verify the law of parallelogram and triangle of forces | 2 | 1 |
| 3 | Law of principle of moments | To verify the law of principle of moments | 2 | 4 |
| 4 | Coefficient of friction | To find the coefficient of friction between wood, steel, copper and glass | 2 | 4 |
| 5 | Reaction at supports | To find the reaction at supports of a simply supported beam carrying point loads only | 2 | 1 |
| 6 | Forces in the jib & tie of a jib crane | To find the forces in the jib & tie of a jib crane | 2 | 2 |
| 7 | Forces in the members of a loaded roof truss | To find the forces in the members of a loaded roof truss | 2 | 2 |
| 8 | Mechanical advantages, velocity ratio and efficiency | To find the mechanical advantages, velocity ratio and efficiency of any: (i)Simple wheel & axle (ii) Differential wheel & axle (iii) Differential pulley block (iv)Simple Screw jack (v) Simple Worm & worm wheel (vi) System of Pulleys (any type). | 6 | 3,5 |

**References Books:**

1. Applied Mechanics & Strength of Material: R.S. Khurmi
2. Applied Mechanics: Hemendra Dutt Gupta

**e-Learning Source:**

https://www.youtube.com/watch?v=alHUJ-jvrpU&list=PLCGTVPoYH6Rbj2Ye38lQgUKACNMMem-wA

| PO-PSO / CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 1 | | 1 | 3 | 1 | 1 | 2 | | | | | - | 2 |
| **CO2** | 2 | | 1 | | | 1 | 2 | | | | | 2 | - |
| **CO3** | 1 | 1 | 1 | | | | 1 | | | | | 3 | 2 |
| **CO4** | 1 | 1 | 1 | 1 | 3 | | 1 | | | | | - | 3 |
| **CO5** | 1 | 1 | 1 | | 3 | | 2 | | | | | 1 | - |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

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| **Name & Sign of Program Coordinator** | **Sign & Seal of HoD** |

| Effective from Session: 2010-11 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Course Code** | DPC-251 | **Title of the Course** | Professional Communication | **L** | **T** | **P** | **C** |
| **Year** | I | **Semester** | II | | | | |
| **Pre-Requisite** | DPC-251 | **Co-requisite** | | | | | |
| **Course Objectives** | 1. Developing Effective Verbal and Non-Verbal Communication Skills<br>2. Enhance Written Communication Abilities<br>3. Foster Active Listening and Interpersonal Skills<br>4. Master Communication Tools and Technology<br>5. Understand and Adapt to Diverse Communication Styles | | | | | | |

| **Course Outcomes** | |
|---|---|
| **CO1** | Introduction of International Phonetic Alphabet and Pronunciation practice. |
| **CO2** | From a psychological perspective, objective and outcome of self-description in formal communication situations means that you are focusing attention on you and your behavior, which allows you to evaluate what you see based on the standards and expectations that you have developed throughout your life. |
| **CO3** | The CO of this unit is breeding fresh ideas and taking input from a particular group of students... Identify a solution to a specific problem or issue. Selecting candidates after their written test for hiring in a company. |
| **CO4** | The key objectives outcomes that underline a good presentation often include the following: To establish credibility with your audience. To communicate information clearly to your audience. To persuade and/or influence your audience. The CO of this unit is to establish credibility with your audience. To communicate information clearly to your audience. To persuade and/or influence your audience. |
| **CO5** | The CO of this unit is to differentiate between views and facts, to formulate and delineate useful questions, to choose and apply suitable research methods, to look critically at acquired information and to doubt information that has been offered |

| **Unit No.** | **Title of the Unit** | | **Contact Hrs.** | **Mapped CO** |
|---|---|---|---|---|
| 1 | Introduction to speech sounds | Introduction to speech sounds through (IPA) International Phonetic Alphabet. - Pronunciation practice emphasizing the articulation of vocal sounds & Word stress. - Pronunciation Practice emphasizing the words with spelling pronunciation Mismatch. | 4 | CO1 |
| 2 | Techniques of giving focused self-description | Techniques of giving focused self-description in formal communication Situations. - Practice in describing objects. | 4 | 2 |
| 3 | The basics of group discussion | The basics of group discussion. - Common pitfalls in group discussion. - Techniques for making a claim & supporting it in group discussion. - Techniques for offering polite but firm counter arguments. - Participating in a Debate. | 4 | 3 |
| 4 | The essentials of Seminar Presentation | The essentials of Seminar Presentation. - Techniques for preparing a Seminar Presentation. - Mock Interview: Preparation, unfolding of personality and expressing Ideas effectively. - Role Play/General Conversation, Making polite enquiries at Railway station, Post Office and other Public Places. | 4 | 4 |
| 5 | Project | Project: At the beginning of the Semester each student in the class will be given topics for one informative & one persuasive speech to be delivered by him/her towards the end of the semester. The students will research for, organize and finalize the speeches under the guidance of the subject teacher. For each speech, the student will submit a one-page written outline. | 4 | 5 |

**References Books:**

Grant Taylor: English Conversation Practice (T.M.H.) 2. Grathe King: Colloqnial English Routledge London

Grant Taylor : English Conversation Practice (T.M.H.) 2. Grathe King: Colloqnial English Routledge London

**e-Learning Source:**

https://siayainstitute.ac.ke/wp-content/uploads/2021/05/COMM-SKILLS-NOTES.pdf

https://mrcet.com/downloads/MBA/Professional%20Communication%20Skills.pdf

https://www.scribd.com/document/389612555/COMMUNICATION-SKILLS-SELF-STUDY-NOTES-1-pdf

| **PO-PSO CO** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 1 | | | | | | | | | | 2 | 3 |
| **CO2** | 2 | 1 | | | | | | | | | | | |
| **CO3** | 2 | 1 | | | | | | | | | | | 2 |
| **CO4** | 1 | 2 | | | | | | | | | | 1 | |
| **CO5** | 1 | 1 | | | | | | | | | | | |

**1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation**

| **Name & Sign of Program Coordinator** | **Sign & Seal of HoD** |
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