



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 ii). Indefinite Integral	Integral Calculus – I: Definition of Integration (anti-derivative), Integration of standard functions. Rule of integration (Integration of sum, difference and Scalar multiplication). Indefinite Integral: Integration by substitution, Integration by parts, Integration by partial fraction.	07	1
2	i). Integral Calculus -II ii). Application of Integral Calculus	Integral Calculus – II: Definite Integral: Definition of definite integral, properties and evaluation of definite integral. 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	PSO1	PSO2	PSO3	PSO4
CO1	3	1	3	--	1	--	--	2	-	1	1
CO2	1	3	1	1	2	--	--	2	1	2	-
CO3	--	1	--	2	3	--	--	3	--	2	1
CO4	2	2	2	1	--	--	--	-	2	1	3
CO5	2	1	1	--	1	--	--	-	1	-	2

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: 2015							
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. 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, Fraunhofer 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. 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. Continuous and characteristics of X-rays, Properties & applications of X-rays. 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. Wind energy: Introduction, scope and significance, measurement of wind velocity by anemometer, general principle of windmill, Indian wind energy program. 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=PL5zwY2E7i60XzRPOrKzvSjvxnnyK6jQB3>
2. <https://www.youtube.com/watch?v=IEju3AT1olk&list=PLgwJf8NK-2e4iGfcV1Jz81dF6sXk5LIT3>



PO-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO														
C01	2											2		
C02	2										1	2		
C03	2				2	1						2		
C04	1				2		3					1		
C05	2	2										2	2	

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: 2015							
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						
	2. To provide examples and unsolved problems as much as possible						
	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 the all, disperse systems used in pharmaceutical and other paint industry.
CO3	To provide knowledge about the nature of compounds and 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 application 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. 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. 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	1
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	2
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	3
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. 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	4
Unit-5	Polymers and Synthetic Materials	Polymers and their classification. Average degree of polymerization, Average molecular weight, Free radical polymerisation (Mechanism). Thermosetting and thermoplastic A. Addition polymers and their industrial applications- Polythene, Polystyrene, PVA, PVC, PAN, PMMA, Buna-S, Buna-N, Teflon. 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). 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	5

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

https://drive.google.com/file/d/1HkrXSpQw7_Y5FZPf8iq0T92DRyuGrms3/view?usp=drive_link

https://drive.google.com/file/d/1lsZHgt7nIIdB0iReCbTaP53JZjgzjOZ3/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						
CO2	03	-	-	-	-	-	-						
CO3	03	-	01	-	-	-	02						
CO4	03	01	02	-	-	-	02						
CO5	03	-	-	-	-	-	02						

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: 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/g2K6PXxyB4>

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

Name & Sign of Program Coordinator	Sign & Seal of HoD
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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. 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 of symmetrical solid bodies. Determination of centroid of plain and composite lamina using moment method only, 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 on a rough inclined plane. Calculation of least force required to maintain equilibrium of a body on a rough inclined plane subjected to a force: (a) Acting along the inclined plane Horizontally (b) At some angle with the inclined plane	8	CO3
IV	Machines	Definition of effort, velocity ratio, mechanical advantage and efficiency of a machine 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 mechanical advantage 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 Pulley Block, 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:

- Applied Mechanics & Strength of Material: R.S. Khurmi, S.Chand Publication
- 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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO													
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

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

Effective from Session: 2015-16

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	<ol style="list-style-type: none"> 1. Enhance Verbal Communication Skills. 2. Master Written Communication. 3. Cultivate Interpersonal Skills. 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 letters 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

Name & Sign of Program Coordinator	Sign & Seal of HoD
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Effective from Session: 2015							
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 (Poiseuille's 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 Kirchhoff'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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Integral University, Lucknow

Effective from Session: 2015-16							
Course Code	DWS-251	Title of the Course	WORKSHOP PRACTICE	L	T	P	C
Year	I	Semester	II	0	0	3	
Pre-Requisite	10 TH	Co-requisite					
Course Objectives	The Workshop Practice course is designed to provide hands-on experience with essential tools, machines, and techniques used in various engineering workshops. Students will learn the principles and operations of turning, tapering, threading, and grinding in the lathe shop, emphasizing precision machining and tool grinding. In the fitting and bench working shop, students will practice filing, drilling, tapping, dieing, and creating accurate male-female joints. The blacksmith shop focuses on foundational operations like upsetting, punching, bending, and swaging. Welding exercises include butt joints, lap joints, and oxy-acetylene welding. In the sheet metal shop, students will fabricate objects like funnels, trays, and electrical panel boxes with soldering and forming techniques. Carpentry introduces students to woodworking tools, joints like half-lap and mortise-tenon, and basic lathe operations. Finally, in the foundry, students will make moulds with single and multi-piece patterns, create cores, and cast aluminium. The course aims to equip students with practical skills and knowledge for effective problem-solving and application in mechanical engineering.						

Course Outcomes	
CO1	To acquire skills in basic engineering practice.
CO2	To identify the hand tools and instruments.
CO3	To acquire measuring skills.
CO4	To acquire practical skills in the trades.
CO5	To provides the knowledge of job materials in various shops.
CO5	To provides the knowledge of core technical subjects for making and working of any type of project.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1.	Machine Shop	a. Study of tools and operations b. Plane turning c. Step turning d. Taper turning e. Threading f. Single point cutting tool grinding	6	CO1
2.	Fitting Bench Working Shop	a. Study of tools and operations b. Simple exercises involving filing work c. Making perfect male-female joint d. Simple exercises involving drilling/tapping/die	3	CO2
3.	Black Smithy Shop	a. Study of tools and operations b. Simple exercises based on black smithy operations such as c. Upsetting/drawing down, punching, bending, fullering and swaging	3	CO2
4.	Welding Shop	a. Study of tools and operations b. Simple butt Joint c. Lap Joint d. Oxy acetylene welding	6	CO3
5.	Sheet Metal Shop	a. Study of tools and operations b. Making funnel complete with soldering c. Fabrication of tool box, tray, electrical panel box etc.	3	CO4
6.	Carpentry Shop	a. Study of tools and operation and carpentry Joints. b. Simple exercise using jack plain c. To prepare half lap corner, joint, mortise and tenon joints. d. Simple exercise on woodworking lathe.	3	CO5
7.	Foundry	a. Making a mould using single piece pattern b. Making a mould using two-piece pattern c. Making a mould using a pattern with core print d. Making Pouring and Making an Aluminium Casting.	6	CO5



Integral University, Lucknow

References Books:

Workshop Technology by R. S. Khurmi

e-Learning Source:

https://www.youtube.com/watch?v=sHbvMmOKdjg&list=PL8PvmC2cEsGSCry_RY0Qk2PcsNI5DQZ-h&index=2

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
CO1	2	-	-	2	2	-	-	2	-	-	-	2	2
CO2		-	-	-	3	-	-	-	2	-	-	3	-
CO3	3	-	-	2		-	3	2	-	-	-	2	-
CO4	-	-	-	-	2	-	2	2	-	2	-	2	-
CO5	-	-	-	3	2	-	2	3	2	-	-	-	3
	3	-	-	-	-	2	2	2	-	-	3	-	2

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: 2015							
Course Code	DCAD-251	Title of the Course	Basic Computer Aided Design Lab	L	T	P	C
Year	I	Semester	II	0	0	2	
Pre-Requisite	10 TH PASSED	Co-requisite					
Course Objectives	The course objective is to develop proficiency in using AutoCAD software for drafting, sketching, dimensioning, creating and modifying geometrical figures, drawing orthographic and isometric views, generating top, front, and side views of isometric figures, producing sectional views of solid objects, and performing practical tasks on page setup and scaling.						

Course Outcomes	
CO1	Students will develop good communication skills and teamwork.
CO2	Students will become familiar with office practice and standards.
CO3	Students will become familiar with Auto Cad's two-dimensional drawings.
CO4	Students' ability to convert sketches into engineered drawings will increase.
CO5	Students will be able to draw orthographic projections and sections.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1	AutoCAD	To study Auto CAD software.	2	CO1
2	Sketch and drafting	Study And Sketch of drafting setting.	2	CO2
3	Dimensional sketch	Study and sketch of Dimensional settings.	2	CO3
4	Draw geometrical figure	Draw geometrical figure using drawing commands	2	CO4
5	Modifying figure Scaling	To modify a geometrical figure using editing comment.	2	CO5
6	Orthographic	To draw an orthographic view of a geometrical figure.	2	CO1
7	Isometric view	To Draw isometric view of a geometrical figure.	2	CO2
8	Different view	To Draw top front and side view of an isometric figure.	2	CO3
9	Sectional view	To draw a sectional view of a solid object.	2	CO4
10	Scaling	To do practical on page set up & scaling of drawing.	2	CO5

References Books:
AutoCAD book by Rohit Mongia
e-Learning Source:
https://www.googleadservices.com
https://www.googleadservices.com

PO-PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO											
CO1	3	2	3	2	2	1	1	3	3	3	1
CO2	2	2	3	2	1	1	2	3	1	1	3
CO3	1	3	1	2	2	1	2	1	3	3	2
CO4	2	3	2	2	1	2	3	2	1	2	3
CO5	2	2	3	2	3	1	3	2	2	1	2

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: 2015-16

Course Code	DPC- 251	Title of the Course	Professional Communication	L	T	P	C
Year	I	Semester	SECOND				
Pre-Requisite		Co-requisite					
Course Objectives	Developing Effective Verbal and Non-Verbal Communication Skills Enhance Written Communication Abilities Foster Active Listening and Interpersonal Skills Master Communication Tools and Technology 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	CO2
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	CO3
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	CO4
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	CO5

References Books:

Grant Taylor: English Conversation Practice (T.M.H.) 2. Grathe King: Colloquial English Routledge London
 Grant Taylor : English Conversation Practice (T.M.H.) 2. Grathe King: Colloquial 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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO											
CO1	3	1									
CO2	2	1									
CO3	2	1									
CO4	1	2									
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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