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

Effective from Session: 2010							
Course Code	DPH-201	**Title of the Course**	Applied Physics-II	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	**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	Student learn to analysis to effect of building acoustic condition.
CO2	Student learn about application of ultrasound in various field 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	Student learns to investigate broken telegraph wire with the help of post office box.
CO5	Student learn to simplify the complicated circuit 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, 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. Electric dipole; effect of electric field on dielectrics, polarization. Magnetic Fields & Materials: Dia, Para and Ferro-magnetism, 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 on the basis of 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 its 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 wind mill, Indian wind energy program. Solar energy: Solar radiation and potentiality of solar radiation in India, unit of solar radiation. Bio fuel 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:

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2											1	2				
CO2	2										1	1	2				
CO3	2				2	1						2	2				2
CO4	1				2		3						1				2
CO5	2	2										1	2	2			

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

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

Integral University, Lucknow

Effective from Session:							
Course Code	DCH-201	**Title of the Course**	Applied Chemistry	**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	07	5

		manufacturing. Explosives: TNT, RDX and Dynamite, Paint and Varnish.		

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/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	PSO1	PSO2	PSO3	PSO4
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

Dr. Rida Sagheer **Name & Sign of Program Coordinator**	**Sign & Seal of HoD**

Integral University, Lucknow

Effective from Session: 2015							
Course Code	DAR 201	**Title of the Course**	TECHNICAL DRAWING-II	**L**	**T**	**P**	**C**
Year	1ST YEAR	**Semester**	2ND SEM	**3**	**1**	**0**	**-**
Pre-Requisite		**Co-requisite**					
Course Objectives	To equip students with the skills to create accurate architectural drawings that effectively represent building designs, layouts, and construction details, focusing on advanced drafting methods, standard symbols, and scaled representations.						

Course Outcomes	
CO1	The course aims at developing the requisite level of proficiency in Drawing, which is seen as a primary communication tool in the practice of architecture just like language.
CO2	To develop perception and presentation of architectural forms and buildings.
CO3	Students shall be familiarized with a range of techniques of expression beginning with manual drawing.
CO4	Familiarization with drafting tools and accessories.
CO5	Students learn how to use technical drawings to communicate ideas, such as when designing new projects.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
UNIT-I	**Fundamental of Perspective Drawing in Architecture**	Basis of perspective, cone of vision, central visual ray, picture plane, line of sight through picture plane, spectator. Reality and appearance. Principal aids of perspective, vanishing points, eye level. Study of cubes, sphere, cylinder, prism etc. And their one point & two-point perspective.	08	CO1
UNIT-II	**Plans, Elevations, and Sections of Residential Buildings**	Plane & elevation of a two-room single storied building. Sections of a two-room single storied building.	08	CO2
UNIT-III	**Staircase**	Working drawing of a three bedroom double storied flat roofed residential building. Staircase Details of dog legged stairs (Wooden & RCC). Plans for the remaining type of stairs	08	CO3
UNIT-IV	**Modern Drawing Appliances**	Use and care of modern drawing appliances with emphases on stencils, drawing table template fero & ammonia printing machine.	08	CO4
UNIT-V	**Presentation Drawing**	Different presentation drawing techniques, symbols used in architectural drawings.	08	CO5

References Books:

Civil Engineering Drawing– Gurucharan Singh

Form, Space& Order - Frantis & D K Singh

e-Learning Source:

https://www.youtube.com/watch?v=scRjeB8tnFE

https://www.youtube.com/watch?v=ATGEhLFBtk4

PO-PSO	PO													PSO			
CO	**POI**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PO13**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
CO1	**1**	**3**	**-**	**-**	**-**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**1**	**-**	
CO2	**-**	**3**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**		**3**	
CO3	**-**	**3**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	
CO4	**-**	**2**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	
CO5	**-**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**	

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

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

Integral University, Lucknow

Effective from Session:							
Course Code	DAR 202	**Title of the Course**	FUNDAMENTAL OF ARCHITECTURE	**L**	**T**	**P**	**C**
Year	1ST YEAR	**Semester**	2ND SEM	**3**	**1**	**0**	**40**
Pre-Requisite		**Co-requisite**					
Course Objectives	1. The course aims at developing the requisite level of proficiency in drawing, which is seen as a primary communication tool in the practice of architecture just like language.						

Course Outcomes	
CO1	Students will be able to learn about the evolution of architecture from ancient to modern world.
CO2	Students will be able to learn about the basic design and basic understanding of form, order and space in architecture.
CO3	They will also learn about human activities, space required for activities.
CO4	To ability to create designs using the elements of design.
CO5	To create different compositions.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
UNIT-I	Principles of Architecture	General background, evolution of architecture, definition of architecture and interior design, factors effecting architecture and interior design.	08	CO1
UNIT-II	Aesthetics	Aesthetics in interiors, role of accessories, furniture and fittings. Plumbing & electrical fittings.	08	CO2
UNIT-III	Architectural Composition	Anthropometrics diagram, procedure of functional planning, objective of functional planning, methods of determination of various rooms sizes.	08	CO3
UNIT-IV	Elements Of Architectural Composition	1.Point 2. Lines 3. Figures 4. Forms 5. Scale 6. Proportion 7. Unity 8. Focus 9. Balance 10. Monotony 11. Rhythm 12. Contrast 13. Harmony	08	CO4
UNIT-V	Elements Of Architectural Composition	14. Character 15. Style 16. Materials and structure 17. Textures 18. Ornamentation 19.Role of color, light and shade in interiors and architecture 20. Truth.	08	CO5

References Books:

A Visual Dictonary : Frantis & D K Singh

Form, Space& Order : Frantis & D K Singh

e-Learning Source:

PO-PSO	PO													PSO			
CO	**POI**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PO13**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
CO1	-	-	-	-	-	-	1	-	3	-	-	-	1				
CO2	2	3	-	-	-	-	2	-	-	-	-	-	-				
CO3	-	1	-	-	1	-	2	-	-	-	-	-	-				
CO4	-	-	-	2	-	-	-	-	-	1	-	-	-				
CO5	-	-	3	-	-	-	2	-	-	1	-	-	-				

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

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

Integral University, Lucknow

Effective from Session: 2010-11							
Course Code	DPC- 101/ 201	**Title of the Course**	PROFESSIONAL COMMUNICATION	**L**	**T**	**P**	**C**
Year	FIRST	**Semester**	FIRST/ SECOND		**T**		
Pre-Requisite		**Co-requisite**					
Course Objectives	**Enhance Verbal Communication Skills** **Master Written Communication** **Cultivate Interpersonal Skills** **Develop Professional Etiquette Utilize Communication Technologies**						

Course Outcomes	
CO1	Introduction of the concept of communication, types skills, modern tools, etc...
CO2	The CO of this unit is to make inquiry about people, product, price etc. with the expansion of business operations of a business, importance of business letter is also increasing. To take right decisions: Taking 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 text book 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	PSO1	PSO2	PSO3	PSO4
CO1	3	2									
CO2	2	2									
CO3	1	1									
CO4	2	2									
CO5	3	3									

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

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

Integral University, Lucknow

Effective from Session:							
Course Code	DPH-151/251	**Title of the Course**	Applied Physics Lab	**L**	**T**	**P**	**C**
Year	1st	**Semester**	1st / 2nd	**0**	**0**	**3**	
Pre-Requisite	None	**Co-requisite**	None				
Course Objectives							

Course Outcomes	
CO1	To gain practical knowledge by applying the experimental methods to correlate with the Physics theory.
CO2	Experience and understand basic physical fundamentals and the key vocabulary to describe them: basic Electronics & Electrical, kinematics, dynamics, work and energy, gravitation, fluids.
CO3	Develop skills in observation, interpretation, reasoning, synthesis, generalizing, predicting, and questioning as a way to learn new knowledge.
CO4	Apply conceptual understanding of the physics to general real-world situations.

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

Note: Any ten experiments are to be performed.

References Books:

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

e-Learning Source:

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3												1		2	3	2
CO2	3																2
CO3	2																2
CO4	3																2

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

Name & Sign of Program Coordinator	Sign & Seal of HoD

Integral University, Lucknow

Effective from Session: 2015-16							
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	10th	**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.

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	**Modify 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:

Auto CAD by Rohit Mongia

e-Learning Source:

https://www.googleadservices.com

https://www.googleadservices.com

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
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**

Integral University, Lucknow

Effective from Session: 2010-11							
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
References Books:				

Integral University, Lucknow

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**

Integral University, Lucknow

Effective from Session: 2010-11							
Course Code	DPC151/ 251	**Title of the Course**	Professional Communication	**L**	**T**	**P**	**C**
Year	FIRST	**Semester**	FIRST/ SECOND				
Pre-Requisite		**Co-requisite**					
Course Objectives	Develop 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 inputs 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	1
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	PSO1	PSO2	PSO3	PSO4
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**