Integral University, Lucknow

Effective from Session: 2024-25								
Course Code	DMA-101	**Title of the Course**	APPLIED MATHEMATICS-I		**L**	**T**	**P**	**C**
Year	Ist	**Semester**	1st		**03**	**01**	**00**	**-**
Pre-Requisite	NA	**Co-requisite**	NA					
Course Objectives	To know the basic concepts of Mathematics with their Applications in Engineering.							

Course Outcomes	
CO1	Arithmetic Progression and Geometric Progression can be applied in real life by analyzing a certain pattern that we see in our daily life.
CO2	Trigonometry is widely used in several fields. Some of its uses are Measuring heights and distances, in construction and architecture, flight engineering, marine biology, application of Physics, electrical engineering, manufacturing industry, gaming industry.
CO3	The concept of Complex Number is used in the field of Computer Science. It is also used in coding and programming.
CO4	Here students are getting the knowledge of Graphs, continuity, and differentiation by which they will be able to find areas of any surface.
CO5	By getting full knowledge of Tangent and normal students will be able to use it in daily lives and further studies in Architecture Engineering, Civil Engineering etc.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1.	i) Series ii) Binomial Theorem iii) Determinants	**Series**: **Arithmetical Progression**: nth term of AP, Sum of 'n' terms, Arithmetic Mean. **Geometrical Progression**: nth term of GP, Sum of 'n' terms& infinite terms, Geometric Mean. **Binomial theorem:** Definition of factorial notation, permutation and combination, Binomial theorem for positive index, negative and fractional index (without proof), Application of Binomial theorem. **Determinants:** Definition, expansion and elementary properties of determinant of order 2 and 3. Solution of system of linear equations, Consistency of equations, Cramer's rules.	08	1
.	i) Trigonometry ii) Vector Algebra	**Trigonometry:** Relation between sides and angles of triangles: Simple cases only. **Vector Algebra:** Dot and Cross product, Scalar and vector triple product.	07	2
3.	Complex Number	**Complex Number:** Definition of imaginary number, complex number & its conjugate. Algebra of complex number (equality, addition, subtraction, multiplication and division). Geometrical representation of a complex number, modulus and amplitude. Polar form of a complex number, Square root of a complex number. De Moivre's theorem (without proof) & its application.	08	3
4.	Differential Calculus-I	**Differential Calculus-I** **Functions, limits, continuity:** Definitions of variable, constant, intervals (open, closed, semi-open). Definition of function, elementary methods of finding limits (right and left), elementary test for continuity and differentiability. **Methods of finding derivative:** Fundamental rules of derivatives (Sum and Difference), Derivatives of special functions, Trigonometric functions, exponential function, Function of a function.	09	4
5.	Differential Calculus-II	**Differential Calculus - II** **Differentiation:** Logarithmic differentiation, Function with respect to another function, Function power function, Higher order derivatives. **Application:** Finding Tangents, Normal. Maxima/Minima.	08	5

References Books:
1. Applied Mathematics: Dr. 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://youtu.be/syLIPtxjN0E?si=OrM4IRejVzgmwWpl

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	2	3	-	-	3	2	2	1
CO4	2	2	2	1	-	-	-	-	2	1	3
CO5	2	1	2	3	1	-	-	-	1	-	2

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

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

APPLIED PHYSICS-(A)

(DPH-101)

[COMMON TO ALL DIPLOMA ENGINEERING COURSES]

L T P

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UNIT-1

Measurement:
Units and Dimensions   [6]
Fundamental and derived units:
S.I. Units and Dimensions of physical quantities, Dimensional formula and dimensional
equation, Principal of homogeneity and application of homogeneity principle to:
(i)   Checking the correctness of physical equations
(ii)   Deriving relations among various physical quantitions,
(iii)   Conversion of numerical values of physical quantities form one system of units into
another, Limitations of dimensional analysis, Errors in measurement, accuracy and precision,
random and systematic errors, estimation of probable errors in the result of measurement
(combination of errors in addition, subtraction, multiplication and power). Significant figures and
order of accuracy in respect to instruments.

Vector:
Scaler and vector quantities; Addition, Subtraction, Resolution of vector; Cartesian components
of vector, Scaler and vector product of vectors.

UNIT-II   [10]

Force and Motions:
Newton's Law of Motion, Circular motion, angular velocity, angular acceleration and centripetal
acceleration. Relationship between linear velocity and angular velocity, Relationship between
linear acceleration and angular acceleration.

Fluid mechanics and fiction:
Surface tension, capillaries, equation of continuity, Bernoulli's theorem, stream line and
turbulent flow, Reynold's number. Physical significance of friction, Advantage and disadvantage
of friction and its role in every day life, Static and dynamic frictional forces, Coefficients of
static and dynamic frictions and their measurement, Viscosity, Coefficients of viscosity and its
determination by Stoke's method.

Work, Power and Energy:
Work done by force on bodies moving on horizontal and inclined planes in presence of frictional
forces, Concept of power and its units, Calculation of power(simple cases). Concept of kinetic

and potential energy, various forms of energy, conservation of energy, Force constant of spring, Potential energy of stretched spring.

Unit-III [8]

Elasticity:
Elasticity, Stress and Strain, Hooke's law, Elastic limit, Yielding point and breaking point, Modulus of elasticity, Young's modulus, Bulk modulus and modulus of rigidity, Poisson ratio, Resilience.
Simple Harmonic Motion, Peridic Motion,Characteristics of Simple Harmonic Motion,Equation of Simple Harmonic Motion and determination of Velocity and acceleration, Graphical representation, Spring Mass system, Simple pendulum, Derivation of their periodic time, Energy conservation in Simple Harmonic Motion, Definition of free, Forced, undamped and damped vibrations, Resonance and its sharpness, Q-factor.

Unit-IV [8]

Gas laws and specific heats of gases:
Boyle's law, Charle's law, Gay Lussac's law, Absolute temperature, Kelvin scale of temperature, General gas equation(without derivation), Molar or universal gas constant, Universal gas equation, Standard or normal temperature and pressure (N.T.P), Specific heat of gases, Relation between two specific heat, Thermodynamics variables, first law of thermodynamics(statement and equation only), Isothermal, Isobaric, Isochoric and adiabatic processes (Difference among these processes and equation of state).

Unit-V [8]

Heat transfer and radiation:
Modes of heat transfer, Coefficient of thermal conductivity and its determination by
(i) Searle's Method for good conductors.
(ii) Lee's Method for poor conductors.
Conduction of heat through compound media, Conduction and convection, Radial flow of heat, Blackbody radiation, Stefan's law, Wein's displacement and Rayleigh- Jeans laws, Planck's law.

References:

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

Integral University, Lucknow

Effective from Session:							
Course Code	DCH-101	**Title of the Course**	Applied Chemistry	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	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	By applying knowledge of atomic structure and periodic properties to real-world engineering challenges, such as enhancing the performance of electronic devices, improving energy efficiency, or designing corrosion-resistant materials.
CO2	To explain the fundamental types of chemical bonds (ionic, covalent, and metallic) and their significance in determining the properties of engineering materials.
CO3	Fundamental concepts of electrochemistry, including oxidation-reduction (redox) reactions, electrolytes, electrodes, and electrochemical cells.
CO4	Explain the fundamental principles of chemical kinetics, including the definition of reaction rate, rate laws, and the role of molecular collisions in reactions.
CO5	Identify and explain various physical, chemical, and biological parameters of water quality, including turbidity, pH, dissolved oxygen, hardness, and biological oxygen demand (BOD). Understand modern water purification technologies like reverse osmosis (RO), ultrafiltration (UF), ion exchange, and membrane filtration, and their applications in industrial and municipal water treatment

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
Unit-1	**Atomic Structure** **Classification of Elements**	Basic concept of atomic structure, Matter wave concept, Quantum number, Heisenberg's uncertainty principle, Shapes of orbital Modern classification of elements (s, p, d, and f block elements), periodic properties: ionization potential, electro negativity, electron affinity.	10	
Unit-2	**Chemical Bonding**	Overview of basic concept of Ionic, Covalent & Co-ordinate bonds, Hydrogen bonding, Valence bond theory, Hybridization, VSEPR theory, Molecular orbital theory.	06	
Unit-3	**Electrochemistry -I &II**	Arrhenius theory of electrolytic dissociation, Transport number, Electrolytic conductance, Ostwald dilution law. Concept of acid and bases: Arrhenius, Bronsted & Lewis theory. Concept of pH and numerical. Buffer solutions, Indicators, Solubility product, Common ion effect with their application. Redox reactions, electrode potential (Nernst equation), Electro-chemical cell (Galvanic & Electrolytic). EMF of a cell & free energy change. Standard electrode potential, Electrochemical series & Application. Chemical & electrochemical theory of corrosion, Galvanic Series. Prevention of corrosion by various methods.	10	
Unit-4	**Chemical Kinetics** **Catalysis** **Solid State**	Introduction, Law of mass action, order and molecularity of reaction. Activation energy, rate constants, 1st order reactions and 2nd order reactions. Definition, catalytic reactions properties, Catalytic promoters & poison, autocatalysis & negative catalysis. Theory of catalysis & applications. Types of solids (Amorphous and Crystalline), classification (Molecular, Ionic, Covalent and Metallic), Band theory of solids (Conductors, Semiconductors & Insulators), types of crystals, FCC, BCC, Crystal imperfection.	07	
Unit-5	**Water Treatment**	Hardness of water, its limits and determination of hardness of water by EDTA method. Softening methods (Soda lime, Zeolite and Ion exchange resin process). Disadvantages of hard water in different industries, scale & sludge formation, corrosion, caustic embrittlement, priming & foaming in boilers. Disinfection of Water by chloramine-T, Ozone and chlorine. Advantages and disadvantages of chlorination. Industrial waste & sewage, Municipality waste water treatment, Definition of BOD & COD. Numerical problems based on topics.	07	

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://docs.google.com/document/d/1f9FaU1Y8D6D_5DRCJXXIunGXageT23G0/edit?usp=drive_link&ouid=106019737385905957374&rtpof=true&sd=true
https://drive.google.com/file/d/1lsZHgt7nlIdB0iReCbTaP53JZjgzjOZ3/view?usp=drive_link
https://drive.google.com/file/d/1lymiyHymX86HqsdnkmuIsvZp-zIm02RR/view?usp=drive_link
https://drive.google.com/file/d/1mH1CQmpYLKJeTvyi018gIW2KUS4l-9RK/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: 2013-14								
Course Code	DEC-101	**Title of the Course**	Basic Electronics-1		L	T	P	C
Year	First	**Semester**	First		3	1	0	-
Pre-Requisite	-	**Co-requisite**	-					
Course Objectives								

	Course Outcomes
CO1	Identification of semiconducting materials, different types of diodes and its applications.
CO2	Analysis of transistor and its operations.
CO3	Operation of transistor and its application as amplifier.
CO4	Analysis of single stage and multi stage amplifier.
CO5	

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1		Semiconductor diode: Semiconductor materials N type and P type, P-N junction, its forward and reversed biasing, V-1 characteristic of diode. Different types of diode (symbol, construction and characteristic): Zener diode, varactor diode, point contact diode, tunnel diode, LEDs and photo diodes. Avalanche & zener breakdown. Important specifications. Rectifiers & filters: Need of rectifier, definition. Types of rectifier: Half wave and full wave rectifier (Bridge & center tapped), relationship between D.C. output voltage and A.C. input voltage. Rectification efficiency and ripple factor for rectifier circuits. Need of filters, types of filters: shunt capacitor, series inductor, LC filter and π filter.	8	1
2	Transistors	Bipolar Junction Transistor (BJT): Introductions, basic concepts, PNP and NPN transistors their symbols and mechanism of current flow, relationship between different currents in transistor. Transistor configuration: CB, CE & CC circuit diagram & characteristics. Transistor parameters: input resistance, output resistance, α ß & relation between them. Field Effect Transistor(FET): Construction, operation and characteristics of JEFT, MOSFET & CMOS, comparison between JEFT, MOSFET & BJT.	8	2
3	Biasing of BJT	Introduction, need of biasing, concept of dc load line, selection of operating point (Q-point), Types of biasing circuits: fixed bias, potential divider bias, circuit operation of each circuit.	8	3
4	Single Stage Transistor Amplifier	Single Stage CE amplifier with proper biasing circuit and its working as voltage amplifier. AC load line and its use in: i. Calculation of current and voltage gain of a single stage amplifier circuit. ii. Explanation of phase reversal of the output voltage with respect to input voltage. Introduction to tuned voltage amplifier.	8	4
5	Multistage & Power Amplifiers	Need of multistage amplifier, role of capacitor amplifier, simple numerical problems on gain, frequency response and bandwidth, working of R-C coupled amplifier, transformer coupled amplifier and direct coupled amplifier, advantages, disadvantages and applications of different types of amplifiers, working of push-pull amplifier.	8	5

References Books:
1. Principles of Electronics-V.K.Mehta & Rohit Mehta
2. Principles of Electronics-Shahdev
3. Fundamentals of Electronics-Malvino
4. Principles of Electronics-M.S.Katre Vol.1

e-Learning Source:

Integral University, Lucknow

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

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

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

Integral University, Lucknow

Effective from Session: 2024-25							
Course Code	DEE-101	**Title of the Course**	BASIC ELECTRICAL ENGINEERING	**L**	**T**	**P**	**C**
Year	First	**Semester**	First	3	1	2	-
Pre-Requisite		**Co-requisite**					
Course Objectives	1. Fundamental of current, voltage and power and would be able to utilize in electrical engineering. 2. Study and verification of electrical laws and network theorems for AC & DC circuits.						

Course Outcomes	
CO1	Conceptualize the fundamental of current, voltage and power and would be able to utilize in electrical heating and mechanical work.
CO2	Study the basic laws and DC network theorem which will apply to analyze the different electrical machines and network problems.
CO3	Develop the concept of magnetic flux and analogy between electric and magnetic circuit used in all engineering field.
CO4	Importance of ac circuit ,power factor and resonance in RLC circuit.
CO5	To impart knowledge of poly phase system and its application.eg Electrical machine.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
Unit-I	Introduction of Electrical Engineering	Application of Electrical Engineering in different fields. Basic terminology: Current, Voltage and EMF, Resistor, Capacitor. Series and parallel combination of Resistors and Capacitors. Concept of constant voltage sources and Constant current source, symbols and graphical representation, characteristics of ideal and practical sources. Conversion of voltage sources into current sources and vice versa.	8	1
Unit-II	D.C. Circuit, Lighting Schemes	KVL & KCL, Ohm's law and simple numerical problems based on it. Introduction to Thevenin, Norton and Superposition theorem. LIGHTING SCHEMES: Lux, Candela, Series and parallel connection of wiring. LAMPS: Fluorescent and Incandescent lamp construction and working.	8	2
Unit-III	Electromagnetism	Concept of magnetic flux, flux density, magnetic field intensity (formula based numerical problem). Concept of reluctance and MMF (formula based numerical problem). Analogy between electric and magnetic circuit, B – H curve, Faraday's Law of electromagnetic induction. Lenz's Law, Energy stored in inductor.	8	3
Unit-IV	A.C. circuit	Terminology: Instantaneous value, maximum value, cycle, frequency, alternating current and voltage ,different types of power (Simple numerical problem), Difference between A.C. and D.C. Concept of phase and phase difference, Phasor representation of voltage and current for inductor, capacitor and resistor. Power factor ,RLC series resonance Introduction to three phase system, Advantage of three phase over single phase system. Star and Delta connection, Relationship between phase and line value of current and voltage.	8	4
Unit-V	Electrical machine	Types of A.C. and D.C. motor, Basic principle and working of A.C. and D.C. motor. Basic principle and working of A.C. and D.C. generator. Application of A.C. and D.C. motor. Single phase transformer (Brief introduction). Brief idea about stepper motor, reluctance motor and PMDC motor.	8	5

References Books:

1. Fundamental of Electrical Engg. – Ashfaq Husain

2. Electrical Technology Volume-I – B.L. Thereja

e-Learning Source:

https://nptel.ac.in/

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4
CO1		3	2		1	1	1						2	
CO2		2	2		1				2				2	
CO3		2	2	3	2		2	2	1	2			3	
CO4		2	2			3		2					2	
CO5		2	3				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:								
Course Code	DED-101	**Title of the Course**	Engineering Drawing	**L**	**T**	**P**	**C**	
Year	I	**Semester**	I	3	1	0		
Pre-Requisite	10th	**Co-requisite**	-					
Course Objectives	To instill students about the importance of engineering drawing so students can understand the installation plan and can take different projects in their professional life.							

Course Outcomes	
CO1	Students' ability in legible writing letters and numbers will be improved.
CO2	Students' ability to perform basic sketching techniques and mechanical component drawing will be improved.
CO3	Students will be able to draw orthographic projections of different objects irrespective of number of dimensions and to develop pictorial views.
CO4	Students' ability to produce engineered drawing of any newly designed object will be improved.

Unit No.	Title of the Unit		Contact Hrs.	Mapped CO
1	**Drawing, instruments and their uses and Introduction to Scales**	Introduction to various drawing, instruments.Correct use and care of Instruments. Sizes of drawing sheets and their layouts. Lettering Techniques 1 Sheet Printing of vertical and inclined, normal single stroke capital letters. Printing of vertical and inclined normal single stroke numbers. Stencils and their use. **Introduction to Scales :** 1 Sheet Necesssity and use, R F Types of scales used in general engineering drawing. Plane, diagonal and chord scales.	7	2
2	**Conventional Presentaion, Principles of Projection and Dimensioning Techniques**	Thread (Internal and External), Welded joint, Types of lines, Conventional representation of materials, Conventional representation of machine parts. **Principles of Projection :** Orthographic, Pictorial and perspective. Concept of horizontal and vertical planes. Difference between I and III angle projections. **Dimensioning Techniques:** Projections of points, lines and planes. 2 Sheet Orthographic Projections of Simple Geometrical Solids Edge and axis making given angles with the reference planes. Face making given angles with reference planes. Face and its edge making given angles withreferance planes. Orthographic views of simple composite solids from their isometric views.Exercises on missing surfaces and views.	7	3
3	**Section of Solids and Isometric Projection**	Concept of sectioning Cases involving cutting plane parallel to one of the reference planes and prependicular to the others. Cases involving cutting plane perpendicular to one of the reference planes and inclind to the others plane,true shape of the section **Isometric Projection :** 1 Sheet Isometric scale Isometric projection of solids.	8	2

4	**Free hand sketching and Development of Surfaces**	Use of squared paper Orthographic views of simple solids Isometric views of simple job like carpentary joints **Development of Surfaces :** 1 Sheet Parallel line and radial line methods of developments. Development of simple and truncated surfaces (Cube, prism, cylinder, cone and pyramid).	8	4
5	**Assembly and Disassembly Drawings, Orthographic Projection of Machine Parts and Practice on AUTO CAD**	**Assembly and Disassembly Drawings :** 2 Sheet Plummer block Footstep bearings Couplings etc. Rivetted & Welded Joints Screw and form of screw thread **Orthographic Projection of Machine Parts :** 1 Sheet Nut and Bolt, Locking device, Wall bracket **Practice on AUTO CAD :** To draw geometrical figures using line, circle, arc, polygon, ellipse, rectangle - erase and other editing commonds and osnap commands (two dimensional drawing only) (Printouts of figures)	10	3

References Books:
1. Engineering Drawing : ND Bhatt
2. Engineering Drawing : R.K. Dhawan
3. Engineering Drawing : B.K.Goel.

e-Learning Source:
https://www.youtube.com/watch?v=gp3oKSEnEFM&list=PLDN15nk5uLiD3MEUiqsYPnZOHcVu7um6

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

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

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

Computer Application Lab

(DCS-151/251)

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1. Introduction of computer types, generation, Application, characteristic & Memory.

2. Introduction and practice of Ms-Office package (Ms-Word, Ms- Excel, Ms- Power point & Ms-Access).

3. Introduction & Practice of Internet and e-mail.

4. Programming of 'C' history of character set, variables, and keywords, token data types input and output function.

5. Introduction of Decision control statement- if, if- else, nester if statement and switch case.

6. Programming practice of if, if – else, nested if statement and switch case.

7. Loops- while loop, do- while loop, for loop, break and continuous statements.

8. Programming practice of while loop do- while loop, for loop, break and continuous statements.

9. Array Declaration, initialization of one and two dimensional array.

10. Programming practice on array.

Reference:

1. Computer fundamental-   Sinha & Sinha

2. Computer Basics & 'C'-   V. Rajaraman

3. Office 2007 -   Ruthosky, Seguim, Ruthosky

4. Programming in ANSI-   E Balagurusamy

Integral University, Lucknow

Effective from Session: 2015-16								
Course Code	DCAD-151	**Title of the Course**	BASIC COMPUTER AIDED DESIGN LAB	**L**	**T**	**P**	**C**	
Year	I	**Semester**	I	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-151	**Title of the Course**	WORKSHOP PRACTICE	**L**	**T**	**P**	**C**
Year	I	**Semester**	I	0	0	3	30
Pre-Requisite	Metric Qualified	**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. b. c. d. e. f.	Study of tools and operations Plane turning Step turning Taper turning Threading Single point cutting tool grinding	6	CO1
2.	Fitting Bench Working Shop	a. b. c. d.	Study of tools and operations Simple exercises involving filing work Making perfect male-female joint Simple exercises involving drilling/tapping/die	3	CO2
3.	Black Smithy Shop	a. b. c.	Study of tools and operations Simple exercises based on black smithy operations such as Upsetting/drawing down, punching, bending, fullering and swaging	3	CO2
4.	Welding Shop	a. b. c. d.	Study of tools and operations Simple butt Joint Lap Joint Oxy acetylene welding	6	CO3
5.	Sheet Metal Shop	a. b. c.	Study of tools and operations Making funnel complete with soldering Fabrication of tool box, tray, electrical panel box etc.	3	CO4
6.	Carpentry Shop	a. b. c. d.	Study of tools and operation and carpentry Joints. Simple exercise using jack plain To prepare half lap corner, joint, mortise and tenon joints. Simple exercise on woodworking lathe.	3	CO5
7.	Foundry	a. b. c. d.	Making a mould using single piece pattern Making a mould using two piece pattern Making a mould using a pattern with core print 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**

Integral University, Lucknow

Effective from Session: 2016-17							
Course Code	DCS-151/DCS-251	**Title of the Course**	Computer Application Lab	**L**	**T**	**P**	**C**
Year	1st	**Semester**	1st / 2nd	1		2	
Pre-Requisite		**Co-requisite**					
Course Objectives	To develop basic knowledge and understanding of Computers and C programming language.						

Course Outcomes	
CO1	Students become familiar with the basic fundamentals and concepts of Computer
CO2	Practical knowledge of the MS Office package, viz. MS Word, MS Excel and MS PowerPoint.
CO3	Students are trained with the basic concepts of the C programming language
CO4	Students will be able to develop logics which will help them to create basic programs and applications in C.
CO5	The course is designed to provide complete knowledge of C language.

Practical No.	List of Practicals	Contact Hrs.	Mapped CO
1	Introduction of computer types, generation, Application, characteristic & Memory.	03	CO1
2	Introduction and practice of Ms-Office package (Ms-Word, Ms- Excel, Ms- Power point & Ms-Access).	03	CO2
3	Introduction & Practice of Internet and e-mail.	03	CO2
4	Programming of 'C'- History, character set, variables, and keywords, token data types input and output function.	03	CO3
5	Introduction of Decision control statement- if, if- else, nester if statement and switch case.	03	CO3
6	Programming practice of if, if – else, nested if statement and switch case.	03	CO4
7	Loops- while loop, do- while loop, for loop, break and continuous statements.	03	CO4
8	Programming practice of while loop do- while loop, for loop, break and continuous statements.	03	CO-4
9	Array Declaration, initialization of one and two dimensional array.	03	CO-5
10	Programming practice on array.	03	CO-5

References Books:

1.Computer fundamental- Sinha & Sinha

2.Computer Basics & 'C'- V. Rajaraman

3.Office 2007 -Ruthosky, Seguim, Ruthosky

4.Programming in ANSI- E Balagurusamy

e-Learning Source:

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

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

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