Integral University, Lucknow

Department of Computer Science & Engineering

Study and Evaluation Scheme

Program: Diploma in Engineering

Semester -II

S. No.	Course code	Course Title	Type of Paper	Period Per hr/week/sem			Evaluation Scheme				Sub. Total	Credit	Total Credits	Attributes						
				L	T	P	CT	TA	Total	ESE				Employability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value	Professional Ethics
THEORIES																				
1	DMA-201	Applied Mathematics - I (B)	Core	03	01	00	40	20	60	40	100	3:1:0	4	Y		Y				
2	DPH-201	Applied Physics (B)	Core	03	01	00	40	20	60	40	100	3:1:0	4	Y	Y	Y		Y		
3	DCH-201	Applied Chemistry (B)	Core	03	01	00	40	20	60	40	100	3:1:0	4	Y	Y	Y		Y		
4	DED-201	Engineering Drawing	Core	01	03	00	40	20	60	40	100	1:3:0	4	Y	Y	Y				Y
5	DCS-202	Programming in C and C++	Core	03	01	00	40	20	60	40	100	3:1:0	4	Y	Y	Y				
6	DCS-203	Internet and Webpage Designing	Core	03	01	00	40	20	60	40	100	3:1:0	4	Y	Y	Y				Y
PRACTICALS																				
1	DPH-251	Applied Physics Lab.	Core	00	00	02	40	20	60	40	100	0:0:1	1	Y	Y	Y		Y		
2	DCAD-251	Basic Computer Aided Design Lab.	Core	00	00	02	40	20	60	40	100	0:0:1	1	Y	Y	Y				Y
3	DCS-252	Programming in C Lab.	Core	00	00	02	40	20	60	40	100	0:0:1	1	Y	Y	Y				
4	DCS-253	Internet and Webpage Designing Lab	Core	00	00	02	40	20	60	40	100	0:0:1	1	Y	Y	Y				Y
5	GP-251	General Proficiency		-	-	-	-	-	60	-	60									
Total				**16**	**08**	**08**	**400**	**200**	**660**	**400**	**1060**		**28**							

APPLIED MATHEMATICS-I (B)

(DMA-201)

(Common to All Diploma Engineering Courses)

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UNIT-1 [9]

Differential Calculus-I

Function, Limit, Continuity:

Definitions of variable, constant, intervals (open, closed, semi-open). Definition of function, graph of function, range and domain, value of a function and type of functions. Elementary method for finding limits, continuity& differentiability.

Derivatives:

Definition of derivative and notation, derivative of standard function, derivative of trigonometric function. Fundamental rules for derivative (without proof), derivatives of sum or difference, scalar multiplication, product of function, quotient of function and function of function.

UNIT-2 [9]

Differential Calculus-II

Differentiation:

Logarithmic differentiation, differentiation of implicit function, differentiation of parametric equation, differentiation of a function with respect to another function, differentiation of special functions (Hyperbolic and Inverse circular functions), higher order differentiation, Leibniz‟s theorem.

Application: Tangents and Normals, Maxima and Minima, Rate, Velocity and Acceleration.

UNIT-3 [9]

Integral Calculus:

Definition of Integration(anti-derivative), Integration of standard functions. Rule of integration (Integration of sum, difference and scaler multiplication).

Indefinite Integral:

Integration by substitution, Integration by parts, Integration by partial fraction, Integration of special functions(Hyperbolic and Inverse circular functions).

Definite Integral:

Definition of definite integral, properties and evaluation of definite integral.

UNIT-4 [7]

Application of Integral Calculus:

Finding areas bounded by sample curves, length of simple curves, Volume of solids of revolution, mean value, mean square value, root mean square value of function.

UNIT-5 [6]

Numerical Integration & Error:

Introduction, Newton-Cote‟s Quadrature formula,Trapezoidal rule, Simpson‟s $1/3^{rd}$ rule and $3/8^{th}$ rule.Concept of error for simple function.

References:

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

APPLIED PHYSICS(B)
(DPH-201)
[Common to All Engineering Courses]

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UNIT-I **[5]**

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).Accoustics of buildings, defects and remedy.
Ultrasonics,
Generation, Magnetostriction, Piezoelectric effect, Application in new technology

UNIT-II **[8]**

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.
Fibre Optics :
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

UNIT-III

D.C. Circuits :
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,
Dielectrics :
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.

UNIT-IV[**[12]**

Semiconductor Physics :
classification of solids into conductors, insulators and semiconductors on the basis of energy band structure. Intrinsic and extrinsic semi conductors, 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.

Production of X-rays types of X-rays spectra :
Continuous and characteristics of X-rays,Properties & applications of X-rays.
Nuclear Physics :
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.

UNIT-V **[10]**

Lasers and its Applications :
Absorption and Emission of energy by atom, Spontaneous and Stimulated Emission, Population inversion. Main components of laser and types of laser,Ruby Laser, He-Ne laser and their applications.
Non-conventional energy resources.
Wind energy : Introduction, scope and significance,measurement of wind velocity by anemometer, general principle of wind mill, Indian wind energy programme.
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. **[5]**

References :

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

DCH-201	Applied Chemistry (B)				
Pre-requisite	**Co-Requisite**	**L**	**T**	**P**	**C**
None	**None**	**03**	**01**	**00**	**--**
Objective	To know the basic concept of Chemistry and their Applications in Engineering				
UNIT I	**Fuels:**				07

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.

UNIT II	**Colloidal State of Matter and Lubricants:**	08

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.

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.

UNIT III	**Hydrocarbons:**	08

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.		
UNIT IV	**Organic Reactions and Mechanism:**	08
Fundamental aspects- A. Electrophiles and nucleophiles, Reaction intermediates, Free radicals, Carbocation, Carbanion. B. Inductive effect, Mesomeric effect, Electromeric effect. Mechanism- A. Mechanism of addition reaction (Markonicove's Rule, Cyanohydrin and Peroxide effect). B. Mechanism of substitution reactions; (Nucleophillic) hydrolysis of alkyl halide, electrophillic substitution halogenations, Sulphonation, Nitration and Friedel- Craft reaction. C. Mechanism of Elimination reaction- Dehydration of primary alcohol, Dehydrohalogenation of primary alkyl halide.		
UNIT V	**Polymers and Synthetic Materials:**	09
Polymers- 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.	
Reference books:	6. Applied Chemistry: R. S. Katiyar and J. P. Chaudhary 7. Applied Chemistry: Rakesh Kapoor 8. Principles of general and inorganic chemistry: O. P. Tandon 9. Engineering Chemistry: S. Chandra 10. Applied Chemistry: M. Gupta	

ENGINEERING DRAWING
(DED -201)

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UNIT-I

Drawing, instruments and their uses :

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.

UNIT-II

Conventional Presentaion : **1 Sheet**

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.

UNIT-III

Section of Solids: **1 Sheet**

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.

UNIT-IV

Free hand sketching : **1 Sheet**

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).

UNIT-V

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)

References :

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

Programming in C and C++

(DCS-202)

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UNIT-I **[8]**

Introduction to programming, concept of programming, programming languages and its types, concept of Flow charts and Algorithms, Introduction to C language, history of C, procedural language.

UNIT-II **[8]**

Basics of C: keywords, constant, variables, data types, Operators with its types and expressions in C, input output functions (printf and scanf), header files, control statement: if else, while, do while, for, switch. **UNIT-III**

[8]

Programs in C

Addition, subtraction, multiplication and division of numbers, Calculation of areas-Square, circle, rectangle, Calculation of simple and compound interest. Even odd using if else, Use of Switch case statements, factorial of number using while do-while, Fibonacci series using for loop.

UNIT-IV **[8]**

Introduction to arrays (one dimensional, two dimensional), introduction to strings, functions-function declaration, definition, function calling, Introduction to Structures, Unions, Pointers.

UNIT-V **[8]**

Introduction to Object Oriented Programming- Object oriented approach, limitation of procedural language, Difference between OOP & POP, Characteristics of object oriented language, Objects, Classes, Inheritance, Polymorphism, structure of C++ programs.

References:

1. C in Depth: S.K. Srivastava, Deepali Srivastava, BPB Publication.
2. Programming in ANSI C: E. Balaguruswamy, TMH Publication.
3. Object Oriented Programming with C++: : E. Balaguruswamy, TMH Publication.

Internet and Webpage Designing

(DCS-203)

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Unit 1 : **[8]**

Introduction to Internet ,history ,World Wide Web, basic Internet Terminology, Internet Applications – Commerce on the Internet, Governance on the Internet, Impact of Internet on Society – Crime on/through the Internet.

Unit -2 : **[8]**

TCP/IP – Internet Technology and Internet Protocols, Internet Connectivity, ISP,ISDN, Protocol options – Shell, SLIP, PPP, Services on Internet (Definition and Functions)E-mail, WWW, Telnet, FTP, IRC and Search Engine, Overview of Internet Security, Firewalls, Internet Security.

Unit -3 **[8]**

Internet ,Network definition, Common terminologies: LAN, WAN, Node, Host, Workstation, bandwidth, Interoperability, Types of network: Peer to Peer, Clients Server, DNS, Network topologies, Ethernet, FDDI, ATM.

Unit – 4: **[6]**

Electronic Mail , Email protocols –SMTP, POP3, IMAp4, MIME6, Structure of an Email – Email Address, Email Header, Body and Attachments, Internet Video, Chatting, Social Media, e-commerce.

Unit -5: **[10]**

Internet -Languages, Web Publishing and Browsing Overview, SGML, Web hosting, HTML. CGL, Documents Interchange Standards, Components of Web Publishing, Web Page Design Consideration and Principles, Search and Meta Search Engines,HTTP, HTML Programming Basics,HTML page structure, HTML Text, HTML links, HTML tables, HTML Frames, HTML Images, multimedia.

Reference Books -:

1. Greenlaw R and Hepp E “Fundamentals of Internet and www” 2nd EL, Tata McGrawHill,2007.

2. Ivan Bayross, “HTML, DHTML, JavaScript, Perl CGI”, 3rd Edition, BPB Publications.

3. D. Comer, “The Internet Book”, Pearson Education, 2009.

APPLIED PHYSICS LAB
(DPH-251)

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Note: Any ten experiments are to be performed.

1. Determination of „g‟ using simple pendulum.
2. To find the surface Tension of water by the method of capillary rise.
3. To determine the frequency of A.C. mains by using a sonometer and a horse shoe magnet.
4. To determine the value of modulus of rigidity of given material of a wire by statical method using Barton‟s apparatus.
5. Determination of coefficient of viscosity of water by capillary flow (Poiseuilles method).
6. To determine the height of a tower by Sextant.
7. To determine the moment of Inertia of a flywheel.
8. Determination of velocity of sound by resonance tube.
9. Determination of resistivity of a given wire by Post Office Box.
10. By using Potentiometer, determination of
    (i) E_1/E_2
    (ii) Internal resistance of givn cell.
11. Determination of coefficient of friction on a horizontal plane.
12. Determination of viscosity coefficient of a lubricant by Stoke‟s law.
13. Determination of Spring Constant.
14. Verification of Kirchoff‟s laws.
15. To draw the characteristics of a p-n junction diode.

Basic Computer Aided Design Lab
(DCAD-251)

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List of Experiments:-

1. To study of Auto CAD software.
2. Study And Sketch of drafting setting.
3. Study and sketch of Dimensional setting.
4. To draw geometrical figure using drawing commands.
5. To modify a geometrical figure using editing comment.
6. To draw orthographic view of a geometrical figure.
7. To Draw isometric view of a geometrical figure.
8. To Draw top front ans side view of an isometric figure.
9. To draw sectional view of a soild object.
10. To do practical on page set up & scaling of drawing.

Programming in C Lab

(DCS-252)

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1. To write algorithms for sample programs.
2. To draw the flowchart for sample programs.
3. To write a C program for formatted input and output statements.
4. To write a C program for various operators in „C‟ .
5. To write a C program for decision control with if else statements.
6. To write a C program for decision control with switch case statement.
7. To write a C program for Looping statements.
8. To write a C program for single dimensional integer arrays.
9. To write a C program for two dimensional integer arrays.
10. To write a C program for string functions.
11. To write a C program using structure.
12. To write a C program using pointers.

Internet and Webpage Designing Lab.
(DCS-253)

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1- Internet Surfing

a) Open the website of Yahoo! with the help of Internet Explorer or Netscape Browser

b) Check the properties of your browser.

c) Change the Home Page of your browser. d) Check the History and clear the history.

e) Create a Bookmark.

2- Email

a) Create your email account on any of the familiar email services like hotmail, yahoo, rediffmail etc.

b) Compose and send an email to a friend.

c) Get the email addresses of five of your classmates. Add them to the address book of your email program. Send them each an email.

d) Receive an email from a friend.

e) Attach a document to the email.

f) Retrieve an attachment from an email received.

3- **Search Engines** –

a) Open the search engines Google.

b) Check the Advanced Search Options of Google.

c) Open the search engines Yahoo and search for „Indian Railway"

4- Web Page Development -HTML Create a basic web page.

5- Create a web page containing information about you, your family and friends.

6- Format the text of your web page in different Font, Alignment styles. Move the cursor to a sub-title and set it to Heading2.

7- Experiment with the different heading styles.

8- Add a picture to your web page

9- create a job application form Create an area called section one and place text boxes that receives details - a) Name b) Age c) Gender d) High School e) Qualifications

10- Create an area called section two and place text boxes that receives details - a) Previous Employment b) References c) Qualification At the end place a submit button