UNIVERSITY POLYTECHNIC
INTEGRAL UNIVERSITY, LUCKNOW
DIPLOMA IN ELECTRICAL ENGINEERING

Program Educational Objectives (PEOs)	
PEO-1	To prepare students to excel in industrial and/or higher education field by providing a strong foundation in mathematics, science and engineering.
PEO-2	To prepare a technically qualified engineer to solve complex problems and be able to apply learned skills in engineering careers.
PEO-3	To develop communication skills, ethical attitude and team work in order to succeed in their personal and professional life.
PEO-4	To equip the students with the knowledge on theory and design of core areas of Electrical Engineering in order to develop & troubleshoot modern electrical equipments.
PEO-5	Motivate students to become a good human being and responsible citizen for the overall welfare of the society.

UNIVERSITY POLYTECHNIC
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DIPLOMA IN ELECTRICAL ENGINEERING

Program Specific Outcomes (PSOs)	
PSO-1	To prepare the students to successfully contribute in various Industrial and Government organizations both at the National and International level.
PSO-2	To prepare and inspire the students to become future researchers with innovative ideas for a sustainable development.
PSO-3	Broad theoretical and practical knowledge of construction and working of electrical machines.
PSO-4	Design, drawing, estimate and troubleshooting of electrical machines, electrical installations and switchgear systems.
PSO-5	Onhand practice on construction and working of various types of converters.
PSO-6	Able to communicate and work in team with understanding.

UNIVERSITY POLYTECHNIC
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Program Outcomes (POs)	
PO-1	To inculcate students with strong communication skill, environmental awareness, ethics and moral values so they can work as an individual and team leaders.
PO-2	To provide the knowledge of applied science and mathematics in general and Electrical Engineering in particular so as to develop the necessary skills to analyze and synthesize electrical circuits and systems.
PO-3	To provide indepth theoretical and practical knowledge of corresponding subjects so students can install, operate and do maintenance, performance analysis of different electrical equipments and machines.
PO-4	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.
PO-5	Design, drawing, estimate and troubleshooting of electrical machines, electrical installations and switchgear systems.
PO-6	Knowledge of analog and power electronics devices and components, their uses in converters.
PO-7	Generation, transmission, distribution, protection and utilization of electrical energy in industrial, commercial and residential applications in efficient manner.
PO-8	To understand the principle of operation, construction and working of electrical devices and machines so they can install, operate, run, test and troubleshoot them.
PO-9	To develop the knowledge of interdisciplinary skills so students can excel in their profession.
PO-10	To equip the students about the knowledge of electrical instruments and measurements and their applications in testing of electrical machines and equipments.
PO-11	Use of power electronics devices and converters to meet the power quality and applications in electric drives.
PO-12	To analyze the stability of the system by using different techniques.
PO-13	To learn the operation of logic gates, combinational and sequential circuits.
PO-14	Study of hierarchical development of microprocessor system and simple programming.

SUBJECT NAME: Applied Mathematics-I(A)

SUBJECT CODE: DMA-101

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	Arithmetic Progression and Geometric Progression can be applied in real life by analyzing a certain pattern that we see in our daily life.
CO-2	Trigonometry is widely used in several fields. Some of it's uses are Measuring heights and distances, in construction and architecture, flight engineering, marine biology, application of Physics, electrical engineering, manufacturing industry, gaming industry.
CO-3	The concept of Complex Number is used in the field of Computer Science. It is also used in coding and programming.
CO-4	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.
CO-5	Three dimensional geometry is used in various fields like in computer graphics, biotechnology and medical sciences and in different projects also.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	3	3	3	2	2	-	-	-	3	-	-	-	-	-
CO-2	1	1	3	1	-	1	-	-	-	-	-	-	-	-
CO-3	3	3	3	1	-	1	-	1	2	-	1	-	-	-
CO-4	3	3	-	1	1	-	1	1	1	1	-	1	-	-
CO-5	1	3	2	1	-	1	2	1	3	2	2	3	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Applied Physics (A)

SUBJECT CODE: DPH-101

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure
CO-2	In this student learn investigate the effect of gravity and friction on the motion of machines (mechanical) instrument etc.
CO-3	Students learn to introduce and explain fundamental of fluids mechanics which is used in the application of aerodynamics, hydraulics, marine, dynamic etc.
CO-4	Students learn energy transfer to one gear to another gear in machine and instrument etc.
CO-5	Students learn to analyses some real problem and to formulate the condition of theory of elasticity and application.
CO-6	The student learns to formulate the 1^{st} law of thermodynamics for a close system and arrangement the change in energy in the closed system via heat and work transfer.
CO-7	Distinguish heat transfer by conduction, convection and radiation and calculate the amount of heat energy transfer.
CO-8	Calculate the change in moving boundary work, electrical work shop in close system.
CO-9	Student learns about different thermal process.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	3	3	3	-	-	-	-	-	3	3	-	-	1	-
CO-2	2		2	-	-	-	-	-	3	-	-	2	-	-
CO-3	1	2	2	-	-	-	-	-	3	-	-	-	-	-
CO-4	1	-	3	-	-	2	1	1	3	1	1	-	-	-
CO-5	1	-	3	1	-	-	-	-	3	-	-	-	-	-
CO-6	-	1	2	-	-	1	1	1	3	1	1	-	-	-
CO-7	1	-	2	-	-	-	1	-	3	-	3	-	-	-
CO-8	-	1	3	-	1	1	-	-	3	-	-	-	-	-
CO-9	-	-	1	-	-	-	1	-	3	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Applied Chemistry (A)

SUBJECT CODE: DCH-101

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	Basic concept of atomic structure, Matter wave concept determination of quantum numbers, periodicity of elements in periodic table
CO-2	Idea of various types of chemical bonding, VSEPR theory, Valence bond theory and Molecular orbital theory
CO-3	Concept of acid base theory, pH scale, buffer solution, indicators, common ion effect, electrode potential, Galvanic cell and electrolytic cell, applications of electrochemical series, corrosion and its prevention
CO-4	Rate of reaction, rate constant, molecularity and order of reaction; Understanding of catalyst and their use in various types of reactions; different types of solid and band theory of solids; types of crystal and imperfection of crystal
CO-5	Understanding of soft and hard water; types of hardness present in water; analysis of water hardness and their softening by using Soda-Lime, Zeolite and Ion exchange method; disadvantage of hard water in different industry; disinfection of water: Municipality waste water treatment

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	3	1	-	1	-	2	1	1	-	-	-	-	-
CO-2	-	3	1	-	-	-	1	-	1	-	-	-	-	-
CO-3	-	3	1	-	2	1	1	1	1	2	2	-	-	-
CO-4	-	3	2	-	2	1	1	2	1	2	1	-	-	-
CO-5	-	3	-	-	-	-	-	-	1	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Basic Electrical Engineering-I

SUBJECT CODE: DEE-101

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	Conceptualize the fundamental of current, voltage and power and would be able to utilize in electrical heating and mechanical work
CO-2	Characterization of material on the basis of their conductivity and permeability for the use in the field electrical and electronic engineering.
CO-3	Study the basic laws and DC network theorem which will apply to analyse the different electrical machines and network problems
CO-4	Battery maintenance, care and grouping of cell to get required Ah.
CO-5	Classification of different types of capacitors. And to know influence dielectric as well series parallel combination on capacitance value.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1		3	2	-	1	1	1	-	-	-	-	-	-	-
CO-2		2	2	-	1	-	-	-	2	-	-	-	-	-
CO-3		2	2	3	2	-	2	2	1	2	1	-	-	-
CO-4		2	2	-	-	2	-	2	2	1	-	-	-	-
CO-5		2	3	-	-	-	2	-	2	3	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Basic Electronics-1

SUBJECT CODE: DEC-101

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	Identification of semiconducting materials, different types of diodes and its applications.
CO-2	Analysis of transistor and its operations.
CO-3	Operation of transistor and its application as amplifier.
CO-4	Analysis of single stage and multi stage amplifier.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	1	1	-	-	3	-	-	2	-	-	-	-	-
CO-2	-	1	1	-	-	3	-	-	2	-	-	-	-	-
CO-3	-	1	1	-	-	3	-	-	2	-	-	-	-	-
CO-4	-	1	1	-	-	3	-	-	2	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Engineering Drawing

SUBJECT CODE: DED-101

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	Students' ability in legible writing letters and numbers will be improved.
CO-2	Students' ability to perform basic sketching techniques, instrumental and electrical circuit drawing will be improved.
CO-3	Students will develop good communication skills and team work.
CO-4	Students will become familiar with practice and standards in technical drawing.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	3	2	3	-	-	2	-	-	-	-	-	-	-	-
CO-2	2	3	-	-	3		2	-	-	3	-	-	-	-
CO-3	3	3	2	-	-	-	-	-	-	-	-	-	-	-
CO-4	2	3	-	-	2	-	-	-	3	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Applied Chemistry Lab

SUBJECT CODE: DCH-151

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	Analysis of acidic and basic radical of inorganic mixture
CO-2	Determination of chloride content by Mohr's method in supplied water
CO-3	Testing of total hardness of water sample by EDTA titration method in terms of $CaCO_3$
CO-4	Analysis of temporary hardness in water sample through O'Hener's method.
CO-5	Dissolve oxygen analysis in water sample
CO-6	Analysis of strength of HCl solution through NaOH solution by using pH meter

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	3	2	-	-	-	-	-	1	-	-	-	-	-
CO-2	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-3	-	3	-	-	-	-	-	-	1	-	-	-	-	-
CO-4	-	3	-	-	-	-	-	-	1	-	-	-	-	-
CO-5	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-6	-	3	1	-	-	-	-	-	1	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Basic Computer Aided Design Lab

SUBJECT CODE: DCAD-151

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	Learn basic Auto-Cad skills.
CO-2	Students learn how to operate Auto Cad and transform sketches and technical data into electronic drawings.
CO-3	Understand modeling of curves, surfaces and solids
CO-4	Transform, manipulate the object and understand rapid prototyping and tooling concept in any real life application.
CO-5	Understand FEM based problems.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	2	-	2	1	1	-	-	2	3	-	2	2	-	-
CO-2	2	2	2	1	-	1	-	2	2	-	2	1	-	-
CO-3	2	2	-	2	-	1	-	-	1	-	1	-	-	-
CO-4	2	1	2	-	1	-	-	2	-	-	1	-	-	-
CO-5	2	1	1	-	-	1	-	1	-	-	2	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Computer Application Lab

SUBJECT CODE: DCS-151

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	Bridge the fundamental concepts of computers with the present level of knowledge of the students.
CO-2	Familiarize operating systems, programming languages, peripheral devices, networking, multimedia and internet.
CO-3	Understand binary, hexadecimal and octal number systems and their arithmetic and programming data types
CO-4	Understand how logic circuits and Boolean algebra forms as the basics of digital computer. To prepare students in understanding ICT basics and to make aware of Office automation using MS- Office
CO-5	To Train students with basic concepts of programming using C.
CO-6	To prepare students in understanding ICT basics and to make aware of Office automation using MS- Office.To Train students with basic concepts of programming using C.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	3	2	2	1	-	-	-	-	-	-	-	-	-	-
CO-2	1	1	-	3	-	-	-	-	2	-	-	-	-	3
CO-3	1	-	-	1	2	-	-	-	-	1	-	-	1	3
CO-4	1	2	2	-	-	-	-	-	-	-	-	-	3	2
CO-5	1	-	2	1	2	-	-	-	-	2	1	-	-	3
CO-6	1	1	-	-	-	-	-	2	-	-	-	-	1	3

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Workshop Practice

SUBJECT CODE: DWS-151

YEAR/SEMESTER: $1^{st}/1^{st}$

COURSE OUTCOMES	
CO-1	To acquire skills in basic engineering practice.
CO-2	To identify the hand tools and instruments.
CO-3	To acquire measuring skills.
CO-4	To acquire practical skills in the trades.
CO-5	To provides the knowledge of job materials in various shops.
CO-6	To provides the knowledge of core technical subjects for making and working of any type of project.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	1	_	_	1	_	_	_	_	_	_	_	3	_	_
CO-2	1	_	_	2	_	_	_	_	_	_	_	_	_	_
CO-3	1	_	_	1	_	_	_	_	_	_	_	2	_	_
CO-4	1	_	_	1	_	3	_	--	_	2	_	2	_	_
CO-5	2	_	_	2	_	_	_	_	_	_	_	_	_	_
CO-6	3	_	_	1	_	2	_	_	_	_	_	_	_	_

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Applied Mathematics-I(B)

SUBJECT CODE: DMA-201

YEAR/SEMESTER: 1st/2nd

COURSE OUTCOMES	
CO-1	Here students are getting the knowledge of Graphs, continuity, and differentiation by which they will be able to find areas of any surface.
CO-2	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.
CO-3	Definite and Indefinite integral knowledge makes students wide in solving problems related to big summations and areas related problems. Regarding applications students will be able to solve problems like finding areas bounded by sample curves, length of simple curves, Volume of solids of revolution, mean value, mean square value and root mean square value of function will be easily solved.
CO-4	Applications of Integration will lead students to get a good knowledge of finding areas, volume etc
CO-5	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.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	1	3	3	3	3	-	-	-	-	-	-	-	-	-
CO-2	2	3	3	1	2	-	-	-	-	-	-	-	-	-
CO-3	1	3	2	3	3	2	1	-	1	2	1	-	-	-
CO-4	3	3	2	1	1	-	-	-	-	-	-	-	-	-
CO-5	-	3	3	1	-	-	-	2	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Applied Physics (B)

SUBJECT CODE: DPH-201

YEAR/SEMESTER: 1st/2nd

COURSE OUTCOMES	
CO-1	Student learn to analysis to effect of building acoustic condition
CO-2	Student learn about application of ultrasound in various field like SONAR, medical and research work and sound signal etc.
CO-3	The student learn to introduce and overview of optical fiber and process of transmission of signal and application of various field.
CO-4	Student learns to investigate broken telegraph wire with the help of post office box.
CO-5	Student learn to simplify the complicated circuit by using Kirchhoff's law
CO-6	Student will be able to distinguish among various materials in the basis of magnetic properties like Diamagnetic, Paramagnetic and Ferromagnetic and build the temporary and permanent magnet.
CO-7	Student learns about LASER and various applications in various fields like medical etc.
CO-8	Student learns about basic electronics which promote to learn the characteristics of transistor (amplifier).
CO-9	X-ray and various properties in various field like medical engineering and research center etc

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	3	3	3	-	-	-	-	-	3	3	-	-	1	-
CO-2	2		2	-	-	-	-	-	3	-	-	2	-	-
CO-3	1	2	2	-	-	-	-	-	3	-	-	-	-	-
CO-4	1	-	3	-	-	2	1	1	3	1	1	-	-	-
CO-5	1	-	3	1	-	-	-	-	3	-	-	-	-	-
CO-6	-	1	2	-	-	1	1	1	3	1	1	-	-	-
CO-7	1		2	-	-	-	1	-	3	-	3	-	-	-
CO-8	-	1	3	-	1	1	-	-	3	-	-	-	-	-
CO-9	-	-	1	-	-	-	1	-	3	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Applied Chemistry (B)

SUBJECT CODE: DCH-201

YEAR/SEMESTER: 1st/2nd

COURSE OUTCOMES	
CO-1	Classification and properties of good fuels, calorific value and its determination, refining of petroleum, Benzol, power alcohol, Knocking of engine and anti-knocking agents used to reduce knocking, octane and cetane number, Bergius and Fischer Tropsch's method for hydrogenation of coal, Preparation and uses of Coal gas , oil gas, water gas biogas, LPG and CNG
CO-2	Concept of Colloidal state of matters, preparation of colloids by physical and chemical method, protective colloids, properties of colloids: Brownian movement, Tyndal effect, Electrophoresis and Coagulation. Preparation of emulsion and its application; Lubricants and their types; Function, mechanism and its application in different industry; additive compounds in lubricant
CO-3	IUPAC nomenclature of organic compounds, preparation and uses of ethane, ethane, ethyne, benzene and toluene.
CO-4	Concept of electrophiles and nucleophiles, reaction intermediates: free radical, carbocation, carbanion mechanism of electrophilic and nucleophilic substitution reaction, addition, and elimination reactions.
CO-5	Polymers, synthesis properties and uses of addition and condensation polymers, biopolymers, manufacturing of soap, detergents, Preparation and uses of explosives: TNT, RDX, Dynamite, Synthesis and use of paint and varnish

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	2	-	-	-	-	-	-	-	1	-	-	-	-
CO-2	-	3	-	-	1	-	-	1	-	2	-	-	-	-
CO-3	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-4	-	3	-	-	-	-	-	-	1	-	-	-	-	-
CO-5	-	3	2	-	1	-	1	1	2	2	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Basic Electrical Engineering–II

SUBJECT CODE: DEE-201

YEAR/SEMESTER: $1^{st}/2^{nd}$

COURSE OUTCOMES	
CO-1	Develop the concept of magnetic flux and analogy between electric and magnetic circuit used in all engineering field.
CO-2	Develop the concept of electromagnetic induction laws which is required for electrical machines.
CO-3	Importance of power factor and resonance in RLC circuit.
CO-4	To impart knowledge of poly phase system and its application.
CO-5	To impart the knowledge the harmful effect of magnetic field and benefits to medical science as well engineering field.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	1	3	2	-	2	-	2	2	-	-	-	-	-	-
CO-2	1	-	2	-	1	2		3	1	-	1	-	-	-
CO-3	1	-	2	-	1	-	2	-	-	-	-	-	-	-
CO-4	-	-	-	-	2	-	3	-	2	2	-	-	-	-
CO-5	1	-	-	-	2	-	-	-	2	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Electrical & Electronics Engineering Materials

SUBJECT CODE: DEM-201

YEAR/SEMESTER: 1st/2nd

COURSE OUTCOMES	
CO-1	Properties of conducting material and its application in Electrical and Electronics engineering.
CO-2	Properties and application of insulating materials with respect to the application in engineering fields.
CO-3	Selection of magnetic materials and their applications.
CO-4	Electrical, mechanical, physical and thermal properties of insulating materials.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	2	-	-	-	1	2	-	2	1	-	-	-	-
CO-2	-	2	-	-	-	1	2	-	2	-	-	-	-	-
CO-3	-	2	2	-	2	-	1	-	2	-	-	-	-	-
CO-4	-	2	-	-	-	2	2	-	2	2	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Professional Communication

SUBJECT CODE: DPC-201

YEAR/SEMESTER: 1st/2nd

COURSE OUTCOMES	
CO-1	Introduction of the concept of communication, types skills, modern tools, etc..
CO-2	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.
CO-3	The CO of this unit is to control sentence-level error (grammar, punctuation, and spelling).
CO-4	It's outcome is to employ techniques of active reading, critical reading, and informal reading response for inquiry, learning, and thinking.
CO-5	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.
CO-6	The conclusion of this subject is to increase the students' 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.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	2	3	1	-	1	-	-	-	-	1	-	-	-	-
CO-2	1	1	-	-	2	-	-	-	-	3	-	-	-	-
CO-3	1	-	-	3		-	-	-	-	1	2	-	-	-
CO-4	-	-	1	2	3	-	-	-	-	-	-	-	-	-
CO-5	1	1	-	-	-	-	-	-	-	3	2	-	-	-
CO-6	-	-	-	-	-	-	-	2	3	1	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Applied Physics Lab

SUBJECT CODE: DPH-251

YEAR/SEMESTER: 1st/2nd

COURSE OUTCOMES	
CO-1	To gain practical knowledge by applying the experimental methods to correlate with the Physics theory.
CO-2	Experience and understand basic physical fundamentals and the key vocabulary to describe them: basic Electronics & Electrical, kinematics, dynamics, work and energy, gravitation, fluids.
CO-3	Develop skills in observation, interpretation, reasoning, synthesis, generalizing, predicting and questioning as a way to learn new knowledge.
CO-4	Apply conceptual understanding of the physics to general real-world situations.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	3	3	-	-	-	-	-	2	1	-	-	-	-
CO-2	-	3	3	-	-	-	-	-	2	1	-	-	-	-
CO-3	-	3	3	-	-	-	-	-	1	-	-	-	-	-
CO-4	1	3	3	-	-	1	-	-	1	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Basic Electronics–I Lab

SUBJECT CODE: DEC-251

YEAR/SEMESTER: 1st/2nd

COURSE OUTCOMES	
CO-1	Plotting the characteristic of semiconductor diode and its application in rectifier.
CO-2	Measuring the parameters of single stage and multi stage amplifier like common emitter and RC coupled amplifier.
CO-3	Identification of ICs with its pin configuration.
CO-4	Measurement Of electrical quantities by CRO and multimeter

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	-	3	-	-	3	-	-	1	-	-	-	-	-
CO-2	-	-	3	-	-	-	-	-	1	-	-	-	-	-
CO-3	-	-	3	-	-	-	-	-	1	-	-	-	-	-
CO-4	-	-	3	-	-	-	-	-	1	3	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Basic Electrical Engineering Lab

SUBJECT CODE: DEE-251

YEAR/SEMESTER: 1st/2nd

COURSE OUTCOMES	
CO-1	Familiarization of different electrical measuring instruments (Analog and Digital)
CO-2	Verifying laws of series and parallel connection of circuit elements.
CO-3	Verifying different DC network theorems.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	2	-	-	-	-	3	1	3	-	-	-	-
CO-2	-	1	3	-	2	-	-	-	1	-	-	-	-	-
CO-3	-	1	3	-	2	-	-	-	1	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Professional Communication Lab

SUBJECT CODE: DPC-251

YEAR/SEMESTER: 1st/2nd

COURSE OUTCOMES	
CO-1	Introduction of International Phonetic Alphabet and Pronunciation practice.
CO-2	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.
CO-3	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.
CO-4	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
CO-5	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.
CO-6	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

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	3	2	1	-	-	-	-	-	-	1	-	-	-	-
CO-2	1	2	-	3	-	-	-	-	-	-	-	-	-	-
CO-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO-4	2	1	-	1	3	-	-	-	-	1	-	-	-	-
CO-5	1	-	-	1	2	-	-	-	-	3	1	-	-	-
CO-6	3	1	-	-	2	-	-	-	-	3	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Applied Mathematics-II(A)

SUBJECT CODE: DMA-301

YEAR/SEMESTER: $2^{nd}/3^{rd}$

COURSE OUTCOMES	
CO-1	The students learn about the application of Matrices.
CO-2	The students gain the skill of applying the known results of Matrix algebra for the study of structural properties of graphs and applications of graph theory such as electrical network analysis in expressing a problem.
CO-3	The students use matrix transforms in computer graphics. Software and hardware graphics processor uses matrices for performing operations such as scaling, translation and rotation.
CO-4	The students learn to form and solve problems using differential equations of Electrical circuits, decay of radioactive elements, Motion under gravity, Newton's law of cooling and simple Harmonic motion.
CO-5	To motivate students on the relevance of differential equations in various engineering disciplines for example one-dimensional transient heat conduction.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	3	-	-	-	-	-	-	1	-	-	-	-	-
CO-2	-	3	-	-	1	-	-	-	2	-	-	1	-	-
CO-3	-	3	-	-	1	-	1	-	1	-	-	-	-	-
CO-4	-	3	-	-	1	-	-	-	2	-	2	1	-	-
CO-5	-	3	-	-	-	-	-	-	1	-	2	1	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Electrical Design Drawing & Estimating-I

SUBJECT CODE: DEE-301

YEAR/SEMESTER: 2nd/3rd

COURSE OUTCOMES	
CO-1	Identification and sketching of symbols of electrical equipments and accessories which is needed in single and multiple line drawing of wiring systems.
CO-2	Effective and suitable cost analysis for domestic and power wiring installation for normal and specific conditions.
CO-3	Analyze, compare and controlling light and power circuit accessories of different types of wiring system from different locations according to particular need and condition.
CO-4	Learn to Calculate the load and decide the ratings of electrical equipment and accessories and also decide the number of light and power circuit will be required for Domestic wiring circuit according to IS specification.
CO-5	Design the layout of wiring installation of house and industry and calculation of length of wiring materials before actual wiring to reduce cost of labour charge and wastage.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1		2	2	3	2	-	1	3	-	2	-	-	-	-
CO-2		2	2	-	2	-	2	-	-	2	-	-	-	-
CO-3	-	2	2	2	-	-	-	2	2	-	-	-	-	-
CO-4	-	-	-	3	3	-	2	2	2	2	-	-	-	-
CO-5	2	-	2	3	3	-	-	-	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Electrical Instrument & Measurements-I

SUBJECT CODE: DEE-302

YEAR/SEMESTER: 2nd /3rd

COURSE OUTCOMES	
CO-1	Introduction to different parameters that defines the quality of instruments.
CO-2	Construction, working and application of PMMC and MI instruments.
CO-3	Power measurement in three phase circuit.
CO-4	Construction and working of CT and PT.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	2	-	-	-	-	-	2	3	-	-	-	-
CO-2	-	-	2	-	-	-	-	-	2	3	-	-	-	-
CO-3	-	-	2	-	-	-	-	-	2	3	-	-	-	-
CO-4	-	-	2	-	-	-	-	-	2	3	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Elementary Mechanical and Civil Engineering

SUBJECT CODE: DEE-303

YEAR/SEMESTER: 2nd /3rd

COURSE OUTCOMES	
CO-1	Students will be able to solve problems regarding mechanics such as beams, trusses, shear force and bending moment diagrams etc.
CO-2	Students will be able to find the mechanical efficiency of simple machines.
CO-3	Students will understand functions of boiler, gas turbine external and internal combustion engines etc.
CO-4	Students will understand the working of turbines and pumps, flow of water through and hydrostatic forces.
CO-5	Students will understand the basics of building materials such as cement, brick and concrete.
CO-6	Students will understand the basics of surveying and building foundations.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	-	3	-	-	-	2	-	-	-	3	-	-	-
CO-2	-	1	2	1	1	-	2	1	-	-	-	-	-	-
CO-3	-	1	-	-	-	-	3	2	1	-	1	-	-	-
CO-4	2	3	-	1	1	2	-	2	1	-	-	-	3	-
CO-5	2	3	-	-	1	2	-	1	2	-	-	-	3	-
CO-6	-	-	1	-	2	1	-	-	-	2	1	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Power system

SUBJECT CODE: DEE-306

YEAR/SEMESTER: 2nd/3rd

COURSE OUTCOMES	
CO-1	Study of basic structure of power system network.
CO-2	Different types of conductors and power cables for transmission and distribution
CO-3	Mechanical design characteristic of transmission line.
CO-4	Different performance parameters of overhead lines.
CO-5	Layout of substations equipments.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	2	-	-	-	-	-	-	-	-	-	-	-	-
CO-2	-	-	1	-	-	-	-	-	-	-	-	-	-	-
CO-3	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO-4	-	-	-	-	-	-	3	-	-	-	-	-	-	-
CO-5	-	-	-	-	-	-	-	1	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Circuit Theory

SUBJECT CODE: DEE-307

YEAR/SEMESTER: $2^{nd}/3^{rd}$

COURSE OUTCOMES	
CO-1	Characteristics of ideal and practical energy sources and reducing the complexity of circuit by source transformation.
CO-2	Obtaining the values of voltage, current and power in series and parallel RLC circuit.
CO-3	Obtaining different two port network parameters in a given circuit and their interrelationship.
CO-4	Calculation of three phase power in poly phase circuits.
CO-5	Resonance condition in series and parallel RLC circuits and calculation of different parameters.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	2	-	-	-	-	-	-	-	-	-	-	-	-
CO-2	-	3	-	-	-	2	-	-	-	-	1	2	-	-
CO-3	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-4	-	3	-	-	-	-	-	-	-	-	1	-	-	-
CO-5	-	3	-	-	-	-	-	-	-	-	2	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Electrical Wiring & Fabrication Shop

SUBJECT CODE: DEE-351

YEAR/SEMESTER: 2nd/3rd

COURSE OUTCOMES	
CO-1	Installation of different wiring schemes on board.
CO-2	On hand practice and testing of different wiring installation, MCB and ELCB in the wiring workshop.
CO-3	Conceptualize about the safety measure have to be taken during actual practice of electrical installations**.**

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	3	2	3	3	3	1	2	1	2	2	-	-	-	-
CO-2	2	2	3	-	2	-	2	2	-	-	-	-	-	-
CO-3	1	2	2	3	-	-	1	3	-	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Electrical Instruments & Measurements Lab

SUBJECT CODE: DEE-352

YEAR/SEMESTER: 2nd /3rd

COURSE OUTCOMES	
CO-1	Conversion and extension of ranges of voltmeter and ammeter.
CO-2	Identification of different types of bridges.
CO-3	Measurement of power in single phase and three phase system.
CO-4	Application of CRO for the measurement of different electrical quantities.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	2	-	-	-	-	-	2	3	-	-	-	-
CO-2	-	-	2	-	-	-	-	-	2	3	-	-	-	-
CO-3	-	-	2	-	-	-	-	-	2	3	-	-	-	-
CO-4	-	-	2	-	-	-	-	-	2	3	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Elementary Mechanical Engineering Lab

SUBJECT CODE: DEE-353

YEAR/SEMESTER: 2nd/3rd

COURSE OUTCOMES	
CO-1	Understand the basic concept of Bernoulli theorem
CO-2	Student should be aware with properties of materials.
CO-3	Student should be able learn M.A and V.R of different lifting machine.
CO-4	Understand the working of different hydraulics machine.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	3	3	-	-	-	1	3	-	1	1	1	-	1	-
CO-2	3	1	3	3	1	-	3	1	-	-	-	-	-	1
CO-3	2	-	1	2	2	3	3	1	-	3	3	-	2	-
CO-4	3	2	-	1	1	-	-	1	2	-	-	2	-	1

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Applied Mathematics II-(B)

SUBJECT CODE: DMA-401

YEAR/SEMESTER: $2^{nd}/4^{th}$

COURSE OUTCOMES	
CO-1	Jacobians are used in designing and forging a robot.
CO-2	Vector calculus or vector analysis is used in the description of electromagnetic fields.
CO-3	A simple Laplace transform is conducted while sending signals over any two-way communication medium (FM/AM stereo-2-way radio sets, cellular phones.)
CO-4	Fourier series is used in signal processing.
CO-5	Probability models are useful anywhere that you cannot model a situation deterministically.
CO-6	Robotics also have vector calculus application. In the discipline of electronics/ electrical when there is a requirement of calculating length, area, volume involving vector as parameters.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	3	-	-	-	-	1	1	-	-	-	-	-	-
CO-2	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-3	-	3	-	-	-	-	1	-	-	-	1	2	-	-
CO-4	-	3	-	-	-	-	1	-	-	-	1	2	-	-
CO-5	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-6	-	3	1	-	1	-	-	-	-	-	-	1	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Electronics-II

SUBJECT CODE: DEE-401

YEAR/SEMESTER: 2^{nd} /4^{th}

COURSE OUTCOMES	
CO-1	Different number systems and their conversions.
CO-2	Operation on different logic gates and familiarization of different logic families.
CO-3	Develop design capability of combinational circuit and sequential circuit.
CO-4	Operation of op-amp and its application.
CO-5	Identification of different ICs and its pin diagram configuration.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	1	-	-	--	-	-	-	2	-	-	-	3	-
CO-2	-	1	-	-	-	-	-	-	2	-	-	-	3	-
CO-3	-	1	-	-	-	-	-	-	2	-	-	-	3	-
CO-4	-	1	-	-	-	-	-	-	2	-	-	-	3	-
CO-5	-	1	-	-	-	-	-	-	2	-	-	-	3	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Electrical Instrument & Measurements–II

SUBJECT CODE: DEE-402

YEAR/SEMESTER: $2^{nd}/4^{th}$

COURSE OUTCOMES	
CO-1	Study of different types of energy meters for domestic and commercial purpose.
CO-2	Working and applications of miscellaneous measuring instruments like megger, power factor meter, frequency meters etc.
CO-3	Basic idea and application of electronic instruments like CRO, multi-meters and VTVM.
CO-4	Measurement of electrical quantities using different bridges.
CO-5	Study process instrumentation system and various sensors/transducers.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	1	-	-	-	-	-	-	-	1	-	-	-	-
CO-2	-	-	1	-	-	-	-	-	-	3	-	-	-	-
CO-3	-	-	-	-	-	2	-	-	-	-	-	-	-	-
CO-4	-	2	-	-	-	-	-	-	-	1	-	-	-	-
CO-5	-	-	-	-	-	-	-	-	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Electrical Machines-I

SUBJECT CODE: DEE–403

YEAR/SEMESTER: 2nd/4th

COURSE OUTCOMES	
CO-1	Features of different types of rotating electrical DC machines.
CO-2	Characterization of DC machine according to their characteristics and application.
CO-3	Speed control of DC motor and their applications.
CO-4	Working of transformer and its performance.
CO-5	Interconnection of alternator and its synchronization.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	2	2	2	-	-	2	3	-	2	-	-	-	-
CO-2	-	2	2	2	-	-	2	3	-	2	-	-	-	-
CO-3	-	2	1	2	-	-	2	3	-	1	-	-	-	-
CO-4	-	2	2	2	-	-	2	3	-	2	-	-	-	-
CO-5	-	2	1	2	-	-	2	3	-	2	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Transmission & Distribution of Electrical Power

SUBJECT CODE: DEE-406

YEAR/SEMESTER: $2^{nd}/4^{th}$

COURSE OUTCOMES	
CO-1	To study about general structure and various methods of power transmission and distribution system.
CO-2	Design of electrical and mechanical aspects of transmission and distribution system.
CO-3	Concept of power line carrier communication and its applications.
CO-4	Power factor improvement and its importance.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	2	-	1	-	3	-	-	-	-	-	-	-
CO-2	-	-	-	2	3	-	3	-	-	-	-	-	-	-
CO-3	-	-	-	-	-	2	3	-	-	-	1	-	-	-
CO-4	-	-	-	-	-	-	2	1	-	3	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Power Plant Engineering

SUBJECT CODE: DEE-407

YEAR/SEMESTER: 2nd/4th

COURSE OUTCOMES	
CO-1	Conventional power plants, their operation and accessories used in operation.
CO-2	Nuclear power plant as a base load power plant and diesel power plant as peak load plant, operation and working of different accessories.
CO-3	Considering environmental issues, introduction of non-conventional and renewable energy sources like solar, biomass, wind, tidal etc.
CO-4	Selection of power plant depending upon availability of resources.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	2	1	3	-	-	-	3	-	-	-	-	-	-	-
CO-2	2	1	3	-	-	-	3	-	-	-	-	-	-	-
CO-3	2	1	3	-	-	-	3	-	-	-	-	-	-	-
CO-4	2	1	3	-	-	-	3	-	-	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Electrical Machine-I Lab

SUBJECT CODE: DEE-451

YEAR/SEMESTER: $2^{nd}/4^{th}$

COURSE OUTCOMES	
CO-1	N/I_a characteristics of DC series shunt and compound motors.
CO-2	Polarity test of transformer.
CO-3	Reversal of direction of rotation of compound motor.
CO-4	Study of cumulative and differential compound motors.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	2	2	2	-	-	2	2	-	2	-	-	-	-
CO-2	-	2	3	2	-	-	-	2	-	2	-	-	-	-
CO-3	-	3	2	2	-	-	2	2	-	2	-	-	-	-
CO-4	-	2	2	-	-	-	3	-	-	3	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Electronics-II Lab

SUBJECT CODE: DEE-452

YEAR/SEMESTER: $2^{nd}/4^{th}$

COURSE OUTCOMES	
CO-1	Identification of different ICs.
CO-2	Verification of truth table of different logic gates.
CO-3	Operation of op-amp for different mathematical operations.
CO-4	Verification of logic circuit of adder, subtractor and flip-flop.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	2	-	-	-	-	-	2	-	-	-	3	-
CO-2	-	-	2	-	-	-	-	-	2	-	-	-	3	-
CO-3	-	-	2	-	-	2	-	-	2	-	-	-	3	-
CO-4	-	-	2	-	-	-	-	-	2	-	-	-	3	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Elementary Civil Engineering Lab.

SUBJECT CODE: DEE-453

YEAR/SEMESTER: $2^{nd}/4^{th}$

COURSE OUTCOMES	
CO-1	Identify the different instruments for linear measurement
CO-2	Know the working of linear measurement
CO-3	Identify the different instruments for levelling
CO-4	Record and observing necessary observation with the survey instruments

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	1	1	2	-	-	-	-	-	-	-	-	-	-
CO-2	-	1	1	2	-	-	-	-	-	-	-	-	-	-
CO-3	-	1	1	2	-	-	-	-	-	-	-	-	-	-
CO-4	-	1	1	2	-	-	-	-	-	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Switch Gear and Protection

SUBJECT CODE: DEE-501

YEAR/SEMESTER: $3^{rd}/5^{th}$

COURSE OUTCOMES	
CO-1	Analysis of symmetrical and unsymmetrical faults in power system.
CO-2	Understand different types of circuit breakers and its application.
CO-3	Analysis of different types of relay characteristics.
CO-4	Protection schemes of power system equipments.
CO-5	Methods of grounding and their applications.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	2	-	-	2	-	2	-	-	-	-	-	-	-
CO-2	-	2	1	-	2	-	2	1	-	-	-	-	-	-
CO-3	-	2	1	-	2	-	1	1	-	-	-	-	-	-
CO-4	-	2	1	-	2	-	2	1	-	-	-	-	-	-
CO-5	-	2	1	-	2	-	2	2	-	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Electrical Machine-II

SUBJECT CODE: DEE-504

YEAR/SEMESTER: $3^{rd}/5^{th}$

COURSE OUTCOMES	
CO-1	Learn the construction and principle of operation of different kinds of rotating AC machines.
CO-2	Analyze theoretically, the performance characteristics for different electrical machines and obtain simple equivalent circuit for the machine.
CO-3	Develop phasor diagram and examine performance of synchronous machines.
CO-4	Study different types of single phase motors.
CO-5	Selection of motor for particular job.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO--11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	-	2	-	1	-	-	3	-	-	-	-	-	-
CO-2	-	-	2	-	1	-	-	3	-	-	-	-	-	-
CO-3	-	-	2	-	1	-	-	3	-	-	-	-	-	-
CO-4	-	-	2	-	-	-	-	3	-	-	-	-	-	-
CO-5	-	-	2	-	-	-	-	3	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Installation Maintenance and Repair of Electrical Machines

SUBJECT CODE: DEE-505

YEAR/SEMESTER: 3rd/5th

COURSE OUTCOMES	
CO-1	Guidelines for loading, unloading, installation, testing and commissioning of electrical installation.
CO-2	Maintenance of electrical machines and switch gears.
CO-3	Trouble shooting of electrical machines and underground cables.
CO-4	Need and procedure of different types of earthing for electrical installations

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	1	-	1	-	-	1	-	-	-	-	-	-
CO-2	-	-	2	-	3	-	-	-	-	-	-	-	-	-
CO-3	-	-	-	-	2	-	-	3	-	-	-	-	-	-
CO-4	-	-	1	-	1	-	-	-	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Utilization of Electrical Energy

SUBJECT CODE: DEE-506

YEAR/SEMESTER: 3rd/5th

COURSE OUTCOMES	
CO-1	To impart the knowledge of different methods of illumination, electric heating and welding.
CO-2	Design various lighting scheme for domestic, industrial and commercial installation.
CO-3	Conservation and management of energy considering environmental issues.
CO-4	To impart knowledge of AC and DC electric traction system.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	1	-	-	-	3	2	-	-	-	-	-	-
CO-2	-	-	-	-	2	-	3	1	-	-	-	-	-	-
CO-3	3	1	-	-	-	-	2	-	1	-	-	-	-	-
CO-4	-	-	2	-	-	-	2	1	-	-	3	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Power Electronics-I

SUBJECT CODE: DEE-507

YEAR/SEMESTER: 3rd/5th

COURSE OUTCOMES	
CO-1	Concept of power electronics and thyristor family.
CO-2	Study and characteristics of high power switching devices.
CO-3	Analysis of uncontrolled rectifier for different types of loads.
CO-4	Analysis of different types of controlled rectifier for various combinations of loads.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	2	-	-	-	-	-	2	-	-	-	-	-	-
CO-2	-	-	2	-	-	-	-	-	-	-	3	-	-	-
CO-3	-	-	-	1	-	-	-	-	-	-	-	-	-	-
CO-4	-	-	-	-	-	3	-	-	-	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Environmental Education and Disaster Management

SUBJECT CODE: DEV-501

YEAR/SEMESTER: 3rd/5th

COURSE OUTCOMES	
CO-1	Understand the natural environment and its relationships with human activities.
CO-2	Characterize and analyze human impacts on the environment.
CO-3	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems
CO-4	Capacity to integrate knowledge and to analyze, evaluate and manage the different public health aspects of disaster events at a local and global levels.
CO-5	Capacity to obtain, analyze, and communicate information on risks, relief needs and lessons learned from earlier disasters in order to formulate strategies for mitigation in future scenarios.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	3	-	-	-	-	-	-	-	2	-	-	-	-	-
CO-2	3	-	-	-	-	-	-	-	2	-	-	-	-	-
CO-3	3	-	-	-	-	-	-	-	2	-	-	-	-	-
CO-4	3	-	-	-	-	-	-	-	1	-	-	-	-	-
CO-5	3	-	-	-	-	-	-	-	2	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Power Electronics-I lab

SUBJECT CODE: DEE-553

YEAR/SEMESTER: $3^{rd}/5^{th}$

COURSE OUTCOMES	
CO-1	Application and verification of characteristic of power electronic components.
CO-2	Study and performance of different rectifier circuits.
CO-3	Different methods for triggering of SCR.
CO-4	Application and verification of characteristic of power electronic components.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	2	-	-	-	-	-	2	-	-	-	-	-	-
CO-2	1	-	-	-	-	-	-	-	-	2	-	-	-	-
CO-3	-	-	-	-	2	-	-	-	-	-	-	-	-	-
CO-4	-	-	-	-	-	3	-	-	-	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Electrical Machine-II Lab

SUBJECT CODE: DEE-554

YEAR/SEMESTER: 3rd /5th

COURSE OUTCOMES	
CO-1	Performance characteristic of single phase Induction motor.
CO-2	Performance characteristic of three phase Induction motor.
CO-3	Acquire hands on experience of conducting various tests on three phase synchronous machines and obtaining their performance.
CO-4	Operation of Universal motor under different types of supply.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	-	3	-	1	-	-	3	-	1	-	-	-	-
CO-2	-	-	3	-	1	-	-	3	-	1	-	-	-	-
CO-3	-	-	3	-	1	-	-	3	-	1	-	-	-	-
CO-4	-	-	3	-	1	-	-	3	-	1	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Installation Maintenance Lab

SUBJECT CODE: DEE-555

YEAR/SEMESTER: 3rd /5th

COURSE OUTCOMES	
CO-1	Application of different types of instruments used for electrical installation.
CO-2	Application of megger for fault identification.
CO-3	Troubleshooting of different starters, circuit breakers and electrical machines.
CO-4	Routine and daily maintenance of different electrical installation

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO-2	-	-	-	-	-	-	-	-	-	1	-	-	-	-
CO-3	-	-	-	-	3	-	-	-	-	2	-	-	-	-
CO-4	-	-	2	-	1	-	-	-	-	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Field Exposure

SUBJECT CODE: DEE-557

YEAR/SEMESTER: 3rd /5th

COURSE OUTCOMES	
CO-1	Field exposure of various electrical systems and their operation like substation, power plant etc.
CO-2	To realize and see the design and trouble shooting of electrical machines, installation and switchgear.
CO-3	For experiencing real life working in industry.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	-	2	2	-	2	3	-	-	-	-	-	-
CO-2	-	-	-	2	3	-	-	3	-	1	-	-	-	-
CO-3	3	-	-	1	-	-	-	-	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Electrical Design Drawing and Estimating-II

SUBJECT CODE: DEE-603

YEAR/SEMESTER: $3^{rd}/6^{th}$

COURSE OUTCOMES	
CO-1	Marketing survey for price comparison and selection of best quality material.
CO-2	Different method of earthing according to IE rules for the safety of instruments and human being.
CO-3	Estimation of wiring installation for commercial and industrial buildings.
CO-4	Estimation of costs and Main components of overhead line and underground distribution lines.
CO-5	Costing calculation of material for small substations.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	2	2	3	2	2	-	2	-	2	-	-	-	-	-
CO-2	1	-	2	2	3	-	1	-	2	-	-	-	-	-
CO-3	1	2	-	1	-	2	2	-	2	2	-	-	-	-
CO-4	-	2	-	-	3	-	3	-	-	-	-	-	-	-
CO-5	1	3	2	3	-	-	3	-	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Microprocessor Development System

SUBJECT CODE: DEE-604

YEAR/SEMESTER: $3^{rd}/6^{th}$

COURSE OUTCOMES	
CO-1	Study the concept of memory mapping with the use of address line and explain the Microprocessor's internal architecture and its operation within the area of performance
CO-2	Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the Microprocessor.
CO-3	Design Electronic circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.
CO-4	Analyze assembly language programs; select appropriate assemble into machine a cross Assembler utility of a Microprocessor.
CO-5	Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) and Microcontroller to meet specified performance requirements.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	-	-	-	-	-	-	1	-	-	-	-	3
CO-2	-	-	-	-	-	-	-	-	2	-	-	-	-	3
CO-3	-	-	-	-	-	-	-	-	1	-	-	-	-	2
CO-4	-	-	-	-	-	-	-	-	2	-	-	-	-	3
CO-5	-	-	-	-	-	-	-	-	1	-	-	-	-	3

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Power Electronics-II

SUBJECT CODE: DEE-605

YEAR/SEMESTER: $3^{rd}/6^{th}$

COURSE OUTCOMES	
CO-1	Concept of power electronics and thyristor family.
CO-2	Study and characteristics of high power switching devices.
CO-3	Analysis of uncontrolled rectifier for different types of loads.
CO-4	Analysis of different types of controlled rectifier for various combinations of loads.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	2	-	-	-	3	-	-	-	-	-	-	-	-
CO-2	-	-	2	-	-	-	-	-	-	-	3	-	-	-
CO-3	-	-	-	1	-	-	-	-	-	-	-	-	-	-
CO-4	-	-	-	-	2	-	-	-	-	-	-	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Control System

SUBJECT CODE: DEE-606

YEAR/SEMESTER: $3^{rd}/6^{th}$

COURSE OUTCOMES	
CO-1	Identify open and closed loop control system.
CO-2	Formulate mathematical model for physical systems.
CO-3	Simplify representation of complex systems using reduction techniques.
CO-4	Analyze the system response and stability in both time-domain and frequency domain.
CO-5	Use standard test signals to identify performance characteristics of second-order systems.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO-2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO-3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO-4	-	-	-	-	-	-	-	-	-	-	-	3	-	-
CO-5	-	-	-	-	-	-	-	-	-	-	-	3	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Industrial Management & Entrepreneurship Development

SUBJECT CODE: DIM-601

YEAR/SEMESTER: $3^{rd}/6^{th}$

COURSE OUTCOMES	
CO-1	The course will increase the skills in the students like communication skills, presentation, Human skills, Leadership skills, Managerial skills etc. after the completion of the course.
CO-2	Increase students' capabilities and confidence to handle administrative, managerial and financial activities.
CO-3	The course will assist in developing intellectual skills like creative thinking, Decision making, Leadership, Brain Storming, Motivation, etc.
CO-4	The course will introduce skills in the students like team work, leadership skills, communication skills, body languages, positive attitude, etc.
CO-5	This course is designed to develop understanding of various functions of management, role of workers and engineers and providing knowledge about industrial and tax laws.
CO-6	It also provides the knowledge about the Entrepreneurship, Intellectual property Rights, Project and Project Report, Inventory control in manufacturing process.

CO-PO MAPPING														
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	3	-	-	-	-	-	-		3	-	-	-	-	-
CO-2	3	-	-	-	-	-	1	-	3	-	-	-	-	-
CO-3	3	-	-	-	-	-	-	-	3	-	-	-	-	-
CO-4	3	-	2	-	-	-	-	-	3	2	-	-	-	-
CO-5	3	-	-	-	-	-	-	-	3	-	-	-	-	-
CO-6	3	-	-	-	-	-	-	1	3	-	2	-	-	-
3: Strong contribution, 2: Average contribution, 1: Low contribution														

SUBJECT NAME: Power Electronics-II Lab

SUBJECT CODE: DEE-652

YEAR/SEMESTER: $3^{rd}/6^{th}$

COURSE OUTCOMES	
CO-1	Operation of chopper in voltage commutated mode.
CO-2	Application of MOSFET and IGBT for PWM inverter.
CO-3	Different types of faults and trouble shooting in inverter.
CO-4	Study and verification of three phase AC voltage controller for resistive load

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	-	2	-	-	-	-	-	2	-	-	-	-	-	-
CO-2	-	-	-	1	-	-	-	-	-	2	-	-	-	-
CO-3	-	-	-	-	2	-	-	-	-	-	-	-	-	-
CO-4	-	-	-	-	-	3	-	-	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Electrical Drawing Lab

SUBJECT CODE: DEE-653

YEAR/SEMESTER: $3^{rd}/6^{th}$

COURSE OUTCOMES	
CO-1	Knowledge of specific difference between earthing of commercial and industrial buildings and equipments
CO-2	Develop the drawing skill of AC machines.
CO-3	Impart the knowledge of drawing and control of electrical installation.
CO-4	Imparting knowledge of safety before any installation to avoid hazards of electricity

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	2	2	3	1	-	-	3	-	1	-	-	-	-	-
CO-2	-	1	1	3	3	-	2	-	2	-	-	-	-	-
CO-3	-	2	3	-	3	-	-	-	-	-	-	-	-	-
CO-4	1	2	3	-	-	-	2	-	2	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Microprocessor Development Lab

SUBJECT CODE: DEE-654

YEAR/SEMESTER: $3^{rd}/6^{th}$

COURSE OUTCOMES	
CO-1	Identify relevant information for programming with the Microprocessor
CO-2	Set up programming strategies and select proper mnemonics and run their program on the training boards.
CO-3	Practice different types of programming keeping in mind technical issues and evaluate possible causes of discrepancy in practical experimental observations.
CO-4	Develop testing and experimental procedures on Microprocessor and analyze their operation under different cases.

CO-PO MAPPING

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**	**PO-13**	**PO-14**
CO-1	-	-	-	-	-	-	-	-	1	-	-	-	-	3
CO-2	-	-	-	-	-	-	-	-	1	-	-	-	-	3
CO-3	-	-	-	-	-	-	-	-	1	-	-	-	-	3
CO-4	-	-	-	-	-	-	-	-	1	-	-	-	-	3

3: Strong contribution, 2: Average contribution, 1: Low contribution

SUBJECT NAME: Project

SUBJECT CODE: DEE-656

YEAR/SEMESTER: 3rd/6th

COURSE OUTCOMES	
CO-1	Identification of area in which project of diploma engineering level can be developed.
CO-2	Assembly of components for the demonstration of same project.
CO-3	To prepare report of the working and performance of the project.

CO-PO MAPPING

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13	PO-14
CO-1	2	-	1	3	1	1	1	1	1	1	1	1	1	1
CO-2	-	2	1	3	1	1	1	1	1	1	1	1	1	1
CO-3	3	-	-	-	-	-	-	-	-	-	-	-	-	-

3: Strong contribution, 2: Average contribution, 1: Low contribution

University Polytechnic, Integral University
Diploma in Electronics Engineering

S. No.	Program Outcomes (POs)
PO 1	Apply basic science, mathematics & drawing methodologies to analyze complex engineering problems.
PO 2	Gather requirement specifications, design and test Electronics as well as Electrical systems.
PO 3	Study to design Digital Embedded system with the help of basic programming languages.
PO 4	Application of different Electrical & Electronic circuits in the real world.
PO 5	Study & analysis of analog and digital communication systems.
PO 6	Evaluate strengths and weaknesses of an evolving state of art communication systems.
PO 7	Advanced technologies for the implementation of wired and wireless communication System.
PO 8	Understand and practice professional ethics.
PO 9	Work in a team using technical skills, common tools and environments to achieve project Objective.
PO10	Communicate effectively with peers and others.
P11	Students should be able to solve problems through analytical thinking.
PO12	Pursue life-long learning as a means of enhancing knowledge and skills for continuous Professional advancement.

Year-1, Semester -1

S. No.	Subject Code	Subject	Periods			Evaluation Scheme				Sub. Total
						Sessional			Exam	
			L	T	P	CT	TA	Total	ESE	
Theory Subjects										
1	DMA-101	Applied Mathametics-1(A)	03	01	00	30	20	50	100	150
2	DPH-101	Applied Physics (A)	03	01	00	30	20	50	100	150
3	DCH-101	Applied Chemistry (A)	03	01	00	30	20	50	100	150
4	DECE-101	Electrical Engineering-I	03	01	00	30	20	50	100	150
5	DECE-102	Electronic Components & Devices-I	03	01	00	30	20	50	100	150
6	DED-101	Engineering Drawing	01	03	00	30	20	50	100	150
Practical Subjects										
1	DPH-151	Applied Physics Lab	00	00	02	10	10	20	30	50
2	DECE-151	Electrical Engineering Lab	00	00	02	10	10	20	30	50
3	DCAD-151	Basic Computer Aided Design Lab	00	00	02	10	10	20	30	50
4	DWS-151	Workshop Practice	00	00	03	10	10	20	30	50
5	GP-151	General Proficiency	_	_	_	_	50	_	_	50
Total			16	08	09	_	_	_	_	1150

Subject Name- Applied Mathematics-I(A)

Subject Code- DMA-101

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Here students are getting the knowledge of Series like AP,GP etc. also using Determinents a number of big problems may be easily solved..	3	3	2	2	1	-	-	-	-	-	1	-
CO2	By getting full knowledge of Trigonometry, Hight and Distance, number of problems are solved which helps students for engineering.	1	1	1	1	-	-	-	-	-	-	-	-
CO3	Knowledge of Complex number, De-Moiver Theomers makes students capable of solving problems related to imaginary field/Complex field.	2	2	1	1	-	-	-	-	-	-	1	-
CO4	Applications of Coordinate Geometry makes students capable of findings problems related to 2D, 3D plane, ellipse, parabloas etc.	3	2	-	-	-	-	-	-	-	-	-	-
CO5	The distance between two lines in 2D and 3D are evaluated, which is very helpful for engineering in different branches.	2	1	1	1	-	-	-	-	-	-	1	-

Subject Name- Applied Physics (A)

Subject Code- DPH-101

CO1. Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure
CO2. In this student learn investigate the effect of gravity and friction on the motion of machines (mechanical) instrument etc.
CO3. Students learn to introduce and explain fundamental of fluids mechanics which is used in the application of aerodynamics, hydraulics, marine, dynamic etc.
CO4. students learn energy transfer to one gear to another gear in machine and instrument etc.
CO5. students learn to analyses some real problem and to formulate the condition of theory of elasticity and application.
CO6. The student learns to formulate the 1st law of thermodynamics for a close system and arrangement the change in energy in the closed system via heat and work transfer.
CO7. Distinguish heat transfer by conduction, convection and radiation and calculate the amount of heat energy transfer.
CO8. Calculate the change in moving boundary work, electrical work shop in close system.
CO9. Student learns about different thermal process.

Cos	PO.1	PO.2	PO.3	PO.4	PO.5	PO.6	PO.7	PO.8	PO.9	PO.10	PO.11	PO.12
1	3								2		3	3
2	3										2	2
3	3	1										1
4	2	2										1
5	2			2								1
6	2	1										1
7	2	2									1	
8	2	1										1
9	2											2

Subject Name- Applied Chemistry (A)

Subject Code- DCH-101

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	Basic concept of atomic structure, Matter wave concept determination of quantum numbers, periodicity of elements in periodic table	3	2	-	1	-	-	-	-	-	-	-	-
CO-2	Idea of various types of chemical bonding, VSEPR theory, Valence bond theory and Molecular orbital theory	3	-	-	1	-	-	-	-	-	-	-	-
CO-3	Concept of acid base theory, pH scale, buffer solution, indicators, common ion effect, electrode potential, Galvanic cell and electrolytic cell, applications of electrochemical series, corrosion and its prevention	3	2	-	2	-	1	-	-	-	-	-	-
CO-4	Rate of reaction, rate constant, molecularity and order of reaction; Understanding of catalyst and their use in various types of reactions; different types of solid and band theory of solids; types of crystal and imperfection of crystal	3	3	1	2	-	-	-	-	-	-	-	-
CO-5	Understanding of soft and hard water; types of hardness present in water; analysis of water hardness and their softening by using Soda-Lime, Zeolite and Ion exchange method; disadvantage of hard water in different industry; disinfection of water: Municipality waste water treatment	3	-	-	1	-	1	-	-	-	-	-	-

Subject Name- Electrical Engineering-I

Subject Code- DECE-101

COURSE OUTCOMES	
CO-1	Factors affecting the performance of conducting materials like resistivity, temperature etc.
CO-2	Factors affecting the performance of insulating materials like dielectric strength, weather condition, hydroscopicity etc.
CO-3	Energy storage device like different types of batteries, capacitors etc.
CO-4	Study and verification of electrical laws and network theorems for DC circuits.

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**
CO-1	3	3	---	2	---	---	---	---	---	---	---	---
CO-2	3	3	---	2	---	---	---	---	---	---	---	---
CO-3	---	3	---	3	---	---	---	---	---	---	---	---
CO-4	---	3	---	3	---	---	---	---	---	---	---	---

Subject Name- Electronic Components & Devices-I

Subject Code- DECE-102

DECE102	Electronic Components & Devices-I
CO1	Evaluate the basic circuits parameters like voltage, current, resistance etc.
CO2	Analyze simple analog circuits by the application of KCL and KVL
CO3	Characterize Semiconductor diode and its application.
CO4	Characterize and configure the BJT
CO5	Detailed analysis of BJT and its application as an amplifier

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	-	-	-	-	-	2	-
CO2	3	-	-	-	-	-	-	-	-	-	1	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	3	-	-	2	-	-	-	-	2	-	-	1
CO5	2	-	-	-	-	-	-	-	-	-	-	1

Subject Name- Engineering Drawing

Subject Code- DED-101

ENGINEERING DRAWING (DED-101)													
S.No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Students' ability in legible writing letters and numbers will be improved.	2							1	2			
CO2	Students' ability to perform basic sketching techniques and electronic circuit drawing will be improved.	2	3	3	2								
CO3	Students will be able to draw orthographic projections of different objects irrespective of number of dimensions and to develop pictorial views.	3	2		2					2			
CO4	Students' ability to produce engineered drawing of any newly designed object will be improved..	3	1	2	3						1		

Subject Name- Applied Physics Lab

Subject Code- DPH-151

Subject Name- Electrical Engineering Lab

Subject Code- DECE-151

COURSE OUTCOMES	
CO-1	Familiarization of different electrical measuring instruments (Analog and Digital)
CO-2	Verifying laws of series and parallel connection of circuit elements.
CO-3	Verifying different DC network theorems.

CO-PO MAPPING												
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**
CO-1	3	-	-	-	1	-	-	-	-	-	-	-
CO-2	3	-	-	-	1	-	-	-	-	-	-	-
CO-3	3	-	-	-	1	-	-	-	-	-	-	-

Subject Name- Basic Computer Aided Design Lab

Subject Code- DCAD-151

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Learn basic auto Cad skills.	**1**		**2**	**1**	**1**			**2**	**3**		**2**	**2**
CO2	Students learn how to operate Auto Cad and transform sketches and technical data into electronic drawings.	**3**	**2**	**2**	**1**		**1**		**2**	**2**		**2**	**1**
CO3	Understand modeling of curves, surfaces and solids	**2**	**2**		**1**		**1**			**1**		**1**	
CO4	Transform, manipulate the object and understand rapid prototyping and tooling concept in any real life application.	**2**	**1**	**2**		**1**			**1**			**1**	
CO5	Understand FEM based problems.	**2**	**1**	**1**		**1**			**1**			**2**	

Subject Name- Workshop Practice

Subject Code- DWS-151

Course outcomes:

1- To acquire skills in basic engineering practice.

2- To identify the hand tools and instruments.

3- To acquire measuring skills.

4- To acquire practical skills in the trades.

5- To provides the knowledge of job materials in various shops.

6- To provides the knowledge of core technical subjects for making and working of any type of project.

S. No.	CO description	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	To acquire skills in basic engineering practice.	3	_	_	3	_	_	2	3	_	_	_	3
CO2	To identify the hand tools and instruments.	3	_	_	_	_	_	_	_	3	_	_	_
CO3	To acquire measuring skills.	_	_	_	_	2	_	_	_	2	_	2	2
CO4	To acquire practical skills in the trades.	_	_	_	_	_	3	_	3	3	2	_	2
CO5	To provides the knowledge of job materials in various shops.	_	_	_	_	_	_	_	_	3	_	_	_
CO6	To provides the knowledge of core technical subjects for making and working of any type of project.	_	_	_	1	_	2	_	_	3	_	_	_

Year-1, Semester -2

S. No.	Subject Code	Subject	Periods			Evaluation Scheme				Sub. Total
						Sessional			Exam	
			L	T	P	CT	TA	Total	ESE	
Theory Subjects										
1	DMA-201	Applied Mathametics-1(B)	03	01	00	30	20	50	100	150
2	DPH-201	Applied Physics (B)	03	01	00	30	20	50	100	150
3	DCH-201	Applied Chemistry (B)	03	01	00	30	20	50	100	150
4	DECE-201	Electrical Engineering-II	03	01	00	30	20	50	100	150
5	DECE-202	Electronic Components & Devices-II	03	01	00	30	20	50	100	150
6	DPC-201	Professional Communication	03	01	00	30	20	50	100	150
Practical Subjects										
1	DCH-251	Applied Chemistry Lab	00	00	02	10	10	20	30	50
2	DECE-252	Electronic Components & Device Lab	00	00	02	10	10	20	30	50
3	DCS-251	Computer Application Lab	01	00	02	10	10	20	30	50
4	DPC-251	Professional Communication Lab	00	00	02	10	10	20	30	50
5	GP-251	General Proficiency	_	_	_	_	50	_	_	50
Total			19	06	08	_	_	_	_	1150

Subject Name- Applied Mathematics-I(B)

Subject Code- DMA-201

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Here students are getting the knowledge of Graphs, continuity, and differentiation by which they will be able to find areas of any surface.	3	3	-	-	-	-	-	-	1	-	2	-
CO2	By getting full knowledge of Tangent and normals students will be able to use it in daily lives and further studies in Architecture,engineering, Civil Engineering etc.	1	3	-	-	-	-	-	-	-	-	2	-
CO3	Definite and Indefinite integral knowledge makes students wide in solving problems related to big summations and areas related problems. Regarding applications students will be able to solve problems like 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 will be easily solved.	2	2	2	1	-	-	-	-	-	-	2	-
CO4	Applications of Integration will lead students to get a good knowledge of finding areas, volume etc	2	2	2	1	-	-	-	-	-	-	2	-
CO5	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.	1	1	2	1	-	-	-	-	-	-	2	-

Subject Name- Applied Physics (B)

Subject Code- DPH-201

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 learn 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
CO6. Student will be able to distinguish among various materials in the basis of magnetic properties like Dia, Para and ferromagnetic and build the temporary and permanent magnet.
CO7. Student learns about LASER and various applications in various fields like medical etc.
CO8. Student learns about basic electronics which promote to learn the characteristics of transistor (amplifier).
CO9. X-ray and various properties in various field like medical engineering and research center etc

Cos	PO.1	PO.2	PO.3	PO.4	PO.5	PO.6	PO.7	PO.8	PO.9	PO.10	PO.11	PO.12
1	2											1
2	2										1	1
3	2				2	1						2
4	1				2		3					
5	2	2										1
6	2	2										1
7	2			2			2					2
8	2	1		2								
9	1	2		3								

Subject Name- Applied Chemistry (B)

Subject Code- DCH-201

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	Classification and properties of good fuels, calorific value and its determination, refining of petroleum, Benzol, power alcohol, Knocking of engine and anti-knocking agents used to reduce knocking, octane and cetane number, Bergius and Fischer Tropsch's method for hydrogenation of coal, Preparation and uses of Coal gas , oil gas, water gas biogas, LPG and CNG	3	-	-	-	-	-	-	-	-	-	-	-
CO-2	Concept of Colloidal state of matters, preparation of colloids by physical and chemical method, protective colloids, properties of colloids: Brownian movement, Tyndal effect, Electrophoresis and Coagulation. Preparation of emulsion and its application; Lubricants and their types; Function, mechanism and its application in different industry; additive compounds in lubricant	3	1	-	1	2	-	-	-	-	-	-	-
	IUPAC nomenclature of organic compounds, preparation and uses		-	-	-	-	-	-	-	-	-	-	-

CO-3	of ethane, ethane, ethyne, benzene and toluene.	3											
CO-4	Concept of electrophiles and nucleophiles, reaction intermediates: free radical, carbocation, carbanion mechanism of electrophilic and nucleophilic substitution reaction, addition, and elimination reactions.	3	-	-	1	-	-	-	-	-	-	-	-
CO-5	Polymers, synthesis properties and uses of addition and condensation polymers, biopolymers, manufacturing of soap, detergents, Preparation and uses of explosives: TNT, RDX, Dynamite, Synthesis and use of paint and varnish	3	1	1	2	-	-	-	-	-	-	-	-

Subject Name- Electrical Engineering-II

Subject Code- DECE-201

COURSE OUTCOMES	
CO-1	Classification of different materials.
CO-2	Concepts of single phase and three phase in electrical circuits.
CO-3	Concept of magnetic circuit and simple problems.
CO-4	Transient behavior of electrical parameters and study of harmonics

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**
CO-1	3			-	-	-	-	1			-	-
CO-2				1		-	-	-		3	-	-
CO-3	-			-	1		-	-			-	-
CO-4							2					

Subject Name- Electronic Components & Devices-II

Subject Code- DECE-202

DECE202	**Electronic Component and Devices II**
CO1	Characterize Input and Output performance of different configuration of BJT
CO2	Bias the transistor differently and select operation point.
CO3	Calculate the voltage & current gain of single stage amplifier
CO4	Characterize the FET and MOSFET.
CO5	Characterize MOS and its application.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	2	-	-	-	-	-	-	-	-

CO5	2	-	-	-	-	-	-	-	-	-	-	1

Subject Name- Professional Communication

Subject Code- DPC-201

	Professional Communication (DPC-101)												
	Course Outcomes		CO-PO Mapping										
S No.	CO Dsecriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	Introduction of the concept of communication, types skills, modern tools, etc..	2	3	1	--	1	-	-	-	--	2	---	2
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.	2	1	--	--	2					3	1	2
CO3	The CO of this unit is to control sentence-level error (grammar, punctuation, and spelling).	1	--	--	3						1	2	3

CO4	It's outcome is to employ techniques of active reading, critical reading, and informal reading response for inquiry, learning, and thinking.	--	---	1	2	3							3
Co5	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.	1	1	---	--						3	2	2
Co6	The conclusion of this subject is to increase the students' 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.								2	3	1		3

Subject Name- Applied Chemistry Lab

Subject Code- DCH-251

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	Analysis of acid and basic radical of inorganic mixture	3	-	-	1	-	-	-	-	-	-	-	-
CO-2	Determination of chloride content by Mohr's method in supplied water	3	-	-	1	-	-	-	-	-	-	-	-
CO-3	Testing of total hardness of water sample by EDTA titration method in terms of $CaCO_3$	3	-	-	1	-	-	-	-	-	-	-	-
CO-4	Analysis of temporary hardness in water sample through O'Hener's method.	3	-	-	-	-	-	-	-	-	-	-	-
CO-5	Dissolve oxygen analysis in water sample	3	-	-	-	-	-	-	-	-	-	-	-
CO-6	Analysis of strength of HCl solution through NaOH solution by using pH meter	3	-	-	-	-	-	-	-	-	-	-	-

Subject Name- Electronic Components & Devices Lab

Subject Code- DECE-252

DECE252	Electronic Components and Device Lab
CO1	Should identify passive and active components and different popular IC's.
CO2	Understand the working of rectifiers and filters
CO3	Understand the work of amplifiers and their characteristics.
CO4	Understand the work of oscillators and their application.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-

CO4	3	-	-	-	-	-	-	-	-	-	-	-

	Computer Application Lab (DCS-251)	

Subject Name- Computer Application Lab

Subject Code- DCS-251

	COURSE OUTCOMES	CO-PO Mapping											
S. No	CO DESCRIPTION	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	Students become familiar with the basic fundamentals and concepts of Computer	1	-	2	-		-	2	-	-	-	-	2
CO2	Practical knowledge of the MS Office package, viz. MS Word, MS Excel and MS PowerPoint.	1	-	1	-		-	2	-	-	-	-	3
CO3	Students are trained with the basic concepts of the programming language.	1	-	2	-		-	-	2	-	-	1	2
CO4	The course is designed to provide complete knowledge of C language.	1	-	2	-		-	-	-	-	-	2	3
CO5	Students will be able to develop logics which will help them to create basic programs and applications in C.	1	-	3	-		-	-	-	-	-	2	1
CO6	By learning the basic programming constructs they can easily switch to any other language in future.	1	-	2	-		-	-	-	-	-	3	2

Subject Name- Professional Communication Lab

Subject Code- DPC-251

	Professional Communication (DPC-251)		
	Course Outcomes	CO-PO Mapping	

S No.	CO Dsecriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	Introduction of International Phonetic Alphabet and Pronunciation practice.	3	2	1	--						2		2
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.	1	2	--	3								1
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.									3	2		
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	2	1	--	1	3					1		
Co5	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.	1	--	----	1	2					3	1	
Co6	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	3	1	--	--	2				1	3	1	

Year- II. Semester-III

S.No.	Subject Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional			Exam.	
			L	T	P	CT	TA	Total	ESE	
Theory Subjects										
1	DMA-301	Applied Mathematics-II(A)	03	01	00	30	20	50	100	150
2	DCS-301	Programming in C & C++	03	01	00	30	20	50	100	150
3	DEC-301	Principle of Digital Electronics	03	01	00	30	20	50	100	150
4	DEC-302	Network Filter & Transmission Line-I	03	01	00	30	20	50	100	150
5	DEC-303	Electrical Machines	03	01	00	30	20	50	100	150
6	DEC-304	Electronics Devices & Circuits-I	03	01	00	30	20	50	100	150
Practical Subjects										
1	DEC-351	Principle of Digital Electronics Lab	00	00	02	10	10	20	30	50
2	DEC-352	Network Filter & Transmission Line Lab	00	00	02	10	10	20	30	50
3	DEC-353	Electronics Workshop Lab	00	00	02	10	10	20	30	50
4	GP-351	General Proficiency	-	-	-	-	-	50	-	50
		Total	18	6	6	-	-	-	-	1100

SUBJECT NAME- Applied Mathematics-II(A)

SUBJECT CODE- DMA-301

S. No.	CO Description	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	The students learn about the application of Matrices in complex Engineering problems for recording Math reports.	3	-	-	-	-	-	-	-	-	-	-	-
CO 2	The students gain the skill of applying the known results of Matrix algebra for the study of structural properties of graphs and applications of graph theory such as electrical network analysis and electronic circuits in expressing a problem.	1	-	-	3	-	-	-	-	-	-	1	-
CO 3	The students use matrix transforms in computer graphics. Software and hardware graphics processor uses matrices for performing operations such as scaling, translation and rotation.	1	-	1	3	-	-	-	-	-	-	2	-
CO 4	The students learn to form and solve problems using differential equations of Electrical circuits, decay of radioactive elements, Motion under gravity, Newton's law of cooling and simple Harmonic motion.	1	-	-	3	-	-	-	-	-	-	2	-
CO 5	To motivate students on the relevance of differential equations in various engineering disciplines for example one-dimensional transient heat conduction.	1	-	-	-	-	-	-	-	-	-	1	-

SUBJECT NAME- Programming in C & C++

SUBJECT CODE- DCS-301

	Programming in C and C++ (DCS-301)												
	Course Outcomes	CO-PO Mapping											
S No.	CO Descriptions	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	Obtain knowledge of programming concepts and languages especially C language.	1	-	1	-	1	-	-	-	-	-	2	-
CO2	Illustrate the basic information of C programming likes Data Types, variables, input output functions, control statements etc.	1	-	1	-	1	-	-	-	-	-	3	-
CO3	Apply programming concepts and techniques to build the basic programs of C languages as well as develop the practical approach on programming.	1	-	1	-	1	-	-	-	-	-	1	-
CO4	Illustrate the other advance programming concepts like Array, Pointer, Union, Structure and Functions.	-	-	2	-	-	-	-	-	-	-	3	-
CO5	Illustrate the programming constructs and features of object oriented language, limitation of procedural language and structures of C++ program.	1	-	3	-	-	-	-	-	-	-	2	-
CO6	Provide knowledge of C programming from bottom and develop skill to build program and solve real world problems.	1	-	2	-	-	-	-	-	-	-	3	-

SUBJECT NAME- Principle of Digital Electronics

SUBJECT CODE- DEC-301

DEC-301	**Principal of Digital Electronics**
CO1	Convert different type of codes and number systems which are used in digital communication and computer systems.
CO2	Employ the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency
CO3	Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.
CO4	Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real world application.
CO5	To develop skills to build and troubleshoot counter circuits and programmable logic devices.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3			3							
CO2		2		2							1	
CO3		2		2								1
CO4	1	2		3								
CO5		2	1						2		1	

SUBJECT NAME- Network Filter & Transmission Line - I

SUBJECT CODE- DEC-302

CO1	Apply mesh and nodal analysis on simple circuits and reduce the complex circuits using network theorems.
CO2	Draw and analyse phasor diagrams for different ac circuits using vector diagram.
CO3	Describe the concept of symmetrical, asymmetrical, balanced, unbalanced, T, PI, ladder and L networks with calculation of two port network parameters.
CO4	Determine the characteristic impedance experimentally and Plot the attenuation characteristic of prototype low pass, high pass and band pass filter.
CO5	Measure characteristic impedance of the transmission line.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2		2							1	
CO2	2	2										
CO3		1		3							1	
CO4		1		2	3							
CO5		2		2	2							

SUBJECT NAME- ELECTRICAL MACHINES

SUBJECT CODE- DEC-303

COURSE OUTCOMES	
CO-1	Basic concept of three phase circuit and power measurement.
CO-2	Knowledge about the constructional details, working and principles of transformers.
CO-3	Introduction to electrical machines and their applications.
CO-4	Learn the construction and principle of operation of different kinds of DC machines.
CO-5	Learn the construction and principle of operation of different kinds of AC machines.

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**
CO-1	-	1	-	2	-	-	-	1	2	-	1	2
CO-2	-	1	-	2	-	-	-	1	2	-	1	2
CO-3	-	1	-	2	-	-	-	1	2	-	1	2
CO-4	-	1	-	2	-	-	-	1	2	-	1	2
CO-5	-	1	-	2	-	-	-	1	2	-	1	2

SUBJECT NAME- Electronics Devices & Circuits-I

SUBJECT CODE- DEC-304

CO1	Evaluate frequency response curve for different multi stage amplifier
CO2	Perform comparison between different class of power amplifiers.
CO3	Evaluate the impact of feedback on single stage transistor amplifier.
CO4	Understand the selection and rejection of signals using tuned voltage amplifier
CO5	Define different transmission line & calculation of their parameters.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	1	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	2	-	-	-	-	-	-	-
CO5	-	2	-	-	-	-	1	-	-	-	-	-

SUBJECT NAME- Principle of Digital Electronics Lab

SUBJECT CODE- DEC-351

CO1	Identify the various digital ICs and understand their operation.
CO2	Designing from simple to complex logic circuits.
CO3	Construct basic combinational circuits and verify their functionalities
CO4	Describe the operation and timing constraints for latches and registers.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		3										1
CO2		1	3							1		
CO3	1	2	3									
CO4		2	1								2	

SUBJECT NAME- Network Filter & Transmission Line Lab

SUBJECT CODE- DEC-352

CO1	Solve network problems using mesh, current and node voltage equations.
CO2	Analyze complex networks using Thevenin, Norton, Maximum power transfer, Superposition theorem.
CO3	Obtain characteristics of various transmission lines.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	2
CO3	2	3	-	-	-	-	-	-	-	-	-	-

SUBJECT NAME- Electronics Workshop Lab

SUBJECT CODE- DEC-353

CO1	Identify and test of various component used on PCB.
CO2	Practice on PCB machine and their operations
CO3	Design and fabricate small circuit using technical knowledge.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	1	-	1	-	-	-	-	-	-	-	-	-

Year- II. Semester-IV

S.No.	Subject Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional			Exam.	
			L	T	P	CT	TA	Total	ESE	
Theory Subjects										
1	DMA-401	Applied Mathematics-II(B)	03	01	00	30	20	50	100	150
2	DEC-401	Principle of Communication Engg.	03	01	00	30	20	50	100	150
3	DEC-402	Electronics Devices & Circuits-II	03	01	00	30	20	50	100	150
4	DEC-403	Industrial Electronics & Transducers	03	01	00	30	20	50	100	150
5	DEC-404	Antenna & Wave Propagation	03	01	00	30	20	50	100	150
6	DEC-405	Network Filter & Transmission Line-II	03	01	00	30	20	50	100	150
Practical Subjects										
1	DEC-451	Principle of Communication Engg. Lab	00	00	02	10	10	20	30	50
2	DEC-452	Electronics Devices & Circuits Lab	00	00	02	10	10	20	30	50
3	DEC-453	Industrial Electronics & Transducers Lab	00	00	02	10	10	20	30	50
4	GP-451	General Proficiency	-	-	-	-	-	50	-	50
		Total	18	6	6	-	-	-	-	1100

SUBJECT NAME- Applied Mathematics-II (B)

SUBJECT CODE- DMA-401

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Jacobians are used in designing and forging a robot.	3	2	2	-	-	-	-	-	-	-	2	-
CO2	Vector calculus or vector analysis is used in the description of electromagnetic fields.	2	3	2	1	-	-	-	-	-	-	2	-
CO3	A simple Laplace transform is conducted while sending signals over any two-way communication medium (FM/AM stereo-2-way radio sets, cellular phones.)	2	3	1	-	-	-	-	-	-	-	2	-
CO4	Fourier series is used in signal processing.	3	3	2	1	-	-	-	-	-	-	2	-
CO5	Probability models are useful anywhere that you cannot model a situation deterministically.	2	3	2	2	1	-	-	-	-	-	2	-

SUBJECT NAME- Principle of Communication Engg

SUBJECT CODE- DEC-401

CO1	Perform various modulation and demodulation techniques on analog signals for radio communication.
CO2	Compare the performance of AM, FM and PM schemes.
CO3	Co-Evaluate the performance of PCM, DPCM and DM.
CO4	Perform characteristics evaluation of AM Trans-receiver system
CO5	Analyze concept of various modulation schemes for digital communication

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**1**	**2**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	**2**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	**-**	**1**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	**1**	**-**	**-**	**-**	**2**		**3**	**-**	**-**	**-**	**-**	**-**

SUBJECT NAME- Electronics Devices & Circuits-II

SUBJECT CODE- DEC-402

CO1	Realize various multivibrator circuits using BJT
CO2	Evaluate the technical parameters of inverter and their effect on transistor switching time
CO3	Realize different linear and non-linear application of Op-amp
CO4	understand various process used in the manufacturing of IC

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO2	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	**-**	**2**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SUBJECT NAME- Industrial Electronics & Transducers

SUBJECT CODE- DEC-403

COURSE OUTCOMES	
CO-1	Study of different types of transducer and its applications.
CO-2	Study of different types of sensors and its applications.
CO-3	Familiar with power electronics device.
CO-4	Construction and characteristic of different power electronic devices and its application.
CO-5	Study of working and output waveform of power electronics converter.

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**
CO-1	-	2	3	-	-	-	-	-	-	-	-	1
CO-2	-	2	3	-	-	-	-	-	-	-	-	1
CO-3	-	2	1	-	-	-	-	-	-	-	-	1
CO-4	-	1	2	-	-	-	-	-	-	-	-	1
CO-5	-	2	2	-	-	-	-	-	-	-	-	1

.

SUBJECT NAME- Antenna & Wave Propagation

SUBJECT CODE- DEC-404

CO1	Explain the basic concepts related to electromagnetic waves and its associated terminology.
CO2	To attain knowledge on the basic parameters those are considered in antenna design and their analysis on the basis of different frequency ranges.
CO3	To acquire knowledge on antenna operation and types with their application in real time field.
CO4	Plot and explain the radiation pattern for various antenna as well as for their arrays.
CO5	Demonstrate various modes of propagation of waves i.e. Ground Wave, Sky Wave and Space Wave

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2			1	2	1					
CO2			3	2	1	2	1				1	
CO3	1	2		3								
CO4	1		2								1	
CO5		2				2					1	

SUBJECT NAME- NETWORK FILTER AND TRANSMISSION LINE-II

SUBJECT CODE- DEC-405

COURSE OUTCOMES	
CO-1	Knowledge of power relation in AC circuit.
CO-2	Basic concept of three phase circuit and power measurement.
CO-3	Analysis of symmetrical components and its operators.
CO-4	Introduction of different types of active filters.
CO-5	Concept of reflection and standing wave of transmission line and its equation.

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**
CO-1	-	1	-	2	-	-	-	1	2	-	1	2
CO-2	-	1	-	2	-	-	-	1	2	-	1	2
CO-3	-	1	-	2	-	-	-	1	2	-	1	2
CO-4	-	1	-	2	-	-	-	1	2	-	1	2
CO-5	-	1	-	2	-	-	-	1	2	-	1	2

SUBJECT NAME- Principle of Communication Engineering Lab

SUBJECT CODE- DEC-451

CO1	Observe the performance of AM and FM signals.
CO2	Perform signal sampling on baseband signal and reconstruct the signals
CO3	Generate ASK, PSK and FSK schemes and observe their waveform.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	3	3	-	-	-	-	-	-
CO2	3	-	-	-	3	-	-	-	-	-	-	-
CO3	1	-	-	-	3	1	-	-	-	-	-	-

SUBJECT NAME- Electronics Devices & Circuits Lab

SUBJECT CODE- DEC-452

CO1	Observe and plot the waveshapes at various points of electronic component to understand their behavior.
CO2	Construct and test feedback circuits and analyse their results.
CO3	Test and observe voltage regulation with and without IC regulator in a circuit.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	2	-	-	-
CO2	-	3	2	-	-	-	-	-	1	-	-	-
CO3	-	3	-	2	-	-	-	-	1	-	-	-

SUBJECT NAME- Industrial Electronics & Transducers Lab

SUBJECT CODE- DEC-453

COURSE OUTCOMES	
CO-1	Able to draw the characteristics and calculation of different parameters of SCR and UJT.
CO-2	Able to draw the wave shapes of single phase and three phase rectifier circuits.
CO-3	Able to understand function of LVDT and thermocouple.

CO-PO MAPPING												
	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**
CO-1	-	2	-	2	-	-	-	-	-	-	-	-
CO-2	-	2	-	2	-	-	-	-	-	-	-	-
CO-3	-	2	-	2	-	-	-	-	-	-	-	-

Year-III, Semester -V

S. No.	Subject Code	Subject	Periods			Evaluation Scheme				Sub. Total
						Sessional			Exam	
			L	T	P	CT	TA	Total	ESE	
Theory Subjects										
1	DEC-501	Microprocessor Application & Interfacing	03	01	00	30	20	50	100	150
2	DEC-502	Electronics Instrument & Measurement	03	01	00	30	20	50	100	150
3	DEC-503	Television & Video Engineering	03	01	00	30	20	50	100	150
4	DEC-504	Communication System	03	01	00	30	20	50	100	150
5	DEC-505	Modern Consumer Electronics Appliances	03	01	00	30	20	50	100	150
6	DEV-501	Environmental Education & Disaster Management	03	01	00	30	20	50	100	150
Practical Subjects										
1	DEC-551	Microprocessor Lab	00	00	03	10	10	20	30	50
2	DEC-552	Electronics Instrument & Measurement Lab	00	00	03	10	10	20	30	50
3	DEC-553	Mini Project	00	00	03	10	10	20	30	50
4	DEC-554	Field Exposure	--	--	--	--	--	50	--	50
5	GP-551	General Proficiency	_	_	_	_	--	50	_	50
Total			18	06	09	_	_	_	_	1150

SUBJECT NAME- Microprocessor Application & Interfacing

SUBJECT CODE- DEC-501

CO1	Study the concept of memory mapping with the use of address line and explain the Microprocessor's internal architecture and its operation within the area of performance.
CO2	Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the Microprocessor.
CO3	Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) and Microcontroller to meet specified performance requirements.
CO4	Analyze assembly language programs; select appropriate assemble into machine a cross Assembler utility of a Microprocessor.
CO5	Design Electronic circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2	3	1					1			
CO2		2	3									
CO3		2	2						1			
CO4			3						1		2	
CO5			2	2								

SUBJECT NAME- Electronics Instrument & Measurement

SUBJECT CODE- DEC-502

CO1	Recognize the evolution and history of units and standards in measurements.
CO2	Innovate ideas to improve the existing technology in the field of measurements in terms of accuracy, cost, durability and user friendliness.
CO3	Analyse and solve the varieties of problems and issues coming up in the vast field of measurement system.
CO4	Test and troubleshoot electronic circuits using various measuring instruments.
CO5	Apply signal generator, frequency counter, CRO and digital IC tester for appropriate measurement.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2		2								
CO2				2					1		3	
CO3		2		2					1			
CO4		2		3					1			
CO5		1		3	2							

SUBJECT NAME- Television & Videio Engineerig

SUBJECT CODE- DEC-503

CO1	Identify and select the suitable microphone or loudspeaker according to the application
CO2	Understand the monochrome TV transmission and reception
CO3	Understand the complex process of TV signal transmission.
CO4	Understand the different picture tubes and the different cable TV system.
CO5	Understand the DTH technology.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	-	-	-	-	-	-	-
CO2	1	-	-	-	3	-	-	-	-	-	-	-
CO3	-	-	-	-	3	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	3	-	-	-	-	-
CO5	-	-	-	-	-	-	3	-	-	-	-	1

SUBJECT NAME- Communication System

SUBJECT CODE- DEC-504

CO1	Study the working of specialized microwave component such as magic tee, directional coupler.
CO2	Identify and characterize different components of an Optical Fiber Communication link.
CO3	Study the architecture of satellite communication system
CO4	Understand the ISO/OSI seven layers in a network
CO5	Realize protocols at different layers of a network hierarchy.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	**1**	**-**	**-**	**-**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	**1**	**-**	**-**	**1**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**
CO4	**-**	**2**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**
CO5	**-**	**2**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**

SUBJECT NAME- Modern Consumer Electronics Appliances

SUBJECT CODE- DEC-505

CO1	Demonstrate the working of cellular phone cordless phone FAX machine
CO2	Explain the working of microwave and various other devices like Electronic Regulator, Electronic Ballast.
CO3	Explain the working and application of Food Processor, Washing Machine and Refrigerator.
CO4	Introduce with the concept of ISO as well standard frequency allocation.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SUBJECT NAME- Environmental Education & Disaster Management

SUBJECT CODE- DEV-501

Course outcomes:

1. Understand the natural environment and its relationships with human activities.
2. Characterize and analyze human impacts on the environment.
3. Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.
4. Capacity to integrate knowledge and to analyse, evaluate and manage the different public health aspects of disaster events at a local and global levels.
5. Capacity to obtain, analyse, and communicate information on risks, relief needs and lessons learned from earlier disasters in order to formulate strategies for mitigation in future scenarios

S.NO	CO DESCRIPTION	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	Understand the natural environment and its relationships with human activities.	-	2	-	-	-	-	3	3	-	-	3	-
2	Characterize and analyze human impacts on the environment.	-	1	-	-	-	-	3	-	-	-	2	-
3	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.	-	3	-	-	-	-	1	-	-	-	1	-
4	Capacity to integrate knowledge and to analyse, evaluate and manage the different public health aspects of disaster events at a local and global levels.	-	1	-	-	-	-	2	-	-	-	2	-
5	Capacity to obtain, analyse, and communicate information on risks, relief needs and lessons learned from earlier disasters in order to formulate strategies for mitigation in future scenarios	-	2	-	-	-	-	3	-	-	-	1	-

SUBJECT NAME- Microprocessor Lab

SUBJECT CODE- DEC-551

CO1	Identify relevant information for programming with the Microprocessor
CO2	Set up programming strategies and select proper mnemonics and run their program on the training boards.
CO3	Practice different types of programming keeping in mind technical issues and evaluate possible causes of discrepancy in practical experimental observations.
CO4	Develop testing and experimental procedures on Microprocessor and analyze their operation under different cases.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2	2									
CO2	1	2	3									
CO3			3								2	
CO4			3	2							2	

SUBJECT NAME- Electronics Instrument & Measurement Lab

SUBJECT CODE- DEC-552

CO1	Estimate accurately the values of R, L and C employing suitable DC and AC bridges.
CO2	Understand and estimate errors in a measurement system.
CO3	Evaluation and determination of basic signal parameters using CRO.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**2**	**1**	**-**	**-**	-	**-**	-	**-**	-	**-**	-	**-**
CO2	**2**	**-**	**-**	**-**	-	**-**	-	**-**	-	**-**	-	**-**
CO3	**2**	**1**	**-**	**-**	-	**-**	-	**-**	-	**-**	-	**-**

SUBJECT NAME- Mini Project

SUBJECT CODE- DEC-553

CO1	Draw a PCB layout of any electronic circuit manually.
CO2	Selection and finding a task to solve.
CO3	Step by step solution of a complex problem.
CO4	Implement a circuit on board and its testing.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	3	2	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	3	-
CO4	-	-	3	-	-	-	-	-	2	-	-	1

SUBJECT NAME- Field exposure

SUBJECT CODE- DEC-554

CO1	Should work in professional atmosphere.
CO2	Understand a particular technology or processing or testing in a industry.
CO3	Understand the different process related to industries.
CO4	Should be able to prepare and present a report.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	1	1	1	1	1	3	3	3	-	2
CO2	-	-	2	2	2	2	2	-	-	-	-	-
CO3	-	-	-	-	3	-	7	-	-	-	-	-
CO4	-	-	-	-	-	3	-	-		2	-	-

Year-III, Semester -VI

S. No.	Subject Code	Subject	Periods			Evaluation Scheme				Sub. Total
						Sessional			Exam	
			L	T	P	CT	TA	Total	ESE	
Theory Subjects										
1	DEC-601	Advanced Microprocessor & Microcontroller	04	01	00	30	20	50	100	150
2	DEC-602	Linear Integrated Circuit	04	01	00	30	20	50	100	150
3	DEC-603	Wireless & Mobile Communication	04	01	00	30	20	50	100	150
4	DEC-604	Programmable Logic Controller	04	01	00	30	20	50	100	150
5	DIM-601	Industrial Management & Entrepreneurship Development	04	01	00	30	20	50	100	150
Practical Subjects										
1	DEC-651	Microcontroller & PLC Lab	00	00	03	10	10	20	30	50
2	DEC-652	Linear Integrated Circuit Lab	00	00	03	10	10	20	30	50
3	DEC-653	Wireless & Mobile Communication Lab	00	00	03	10	10	20	30	50
4	DEC-654	Project	00	00	05	50	20	70	100	170
5	GP-651	General Proficiency	_	_	_	_	--	50	_	50
Total			20	05	14	_	_	_	_	1120

SUBJECT NAME- Advanced Microprocessor & Microcontroller

SUBJECT CODE- DEC-601

CO1	Describe the architecture of advanced Microprocessor and introduction of microcontroller.
CO2	Identify a detailed s/w & h/w structure of the Microcontroller.
CO3	Assembling and running an 8051 Program using different instructions.
CO4	Design and implement 8051 microcontroller based systems.
CO5	Distinguish and analyze the properties of Microprocessors & Microcontrollers.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	2										
CO2		2										
CO3			3	1								
CO4		2	3	3								
CO5		3	1									

SUBJECT NAME- Linear Integrated Circuits

SUBJECT CODE- DEC-602

CO1	Acquire the fundamental knowledge of Integrated circuits and their applications.
CO2	Develop analytical capability in analysing signal generation, signal amplification, signal conditioning and signal processing applications of analog integrated circuit packages.
CO3	Design and analyse various signals using linear and non-linear application of Op-amps.
CO4	Acquire skills to develop simple filter circuits and various amplifiers and can solve problems related to it.
CO5	Illustrate the function of application specific ICs such as Voltage regulators, PLL and its application in electronic circuits.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2		3	1							
CO2		2		2	1						3	
CO3	1		3	2	2							
CO4		2	2		2							
CO5		2		3	1							

SUBJECT NAME- Wireless & Mobile Communication

SUBJECT CODE- DEC-603

CO1	Explain different wireless communication systems and their components.
CO2	Explain the component of mobile communication.
CO3	Explain different wireless communication systems and their components.
CO4	Explain the structure if of GSM and CDMA.
CO5	Explain the different cyber-attack and various security mechanisms taken to prevent it.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	1	2	2	-	-	-	-	-
CO2	2	-	-	-	2	2	1	-	-	-	-	-
CO3	2	-	-	-	3	2	2	-	-	-	-	-
CO4	2	-	-	-		3	3	-	-	-	-	-
CO5	-	-	-	-	-	1	-	-	-	-	-	-

SUBJECT NAME- Programmable Logic Controller

SUBJECT CODE- DEC-604

DEC604	**Programmable Logic Controller**
CO1	Understand the need and importance of industrial automation.
CO2	Understand the basics of digital electronics.
CO3	Code different programs in ladder logic
CO4	Know about the different programming techniques.
CO5	Code different plant level programs

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	-	-	-	-	-	3	-	-	-	-	-
CO2	1	-	-	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	3	-	-	-	-	-
CO4	-	-	-	-	-	-	2	-	1	-	-	-
CO5	-	-	-	-	-	-	2	-	-	-	-	-

SUBJECT NAME- Industrial Management & Entrepreneurship Development

SUBJECT CODE- DIM-601

CO	Co- Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
1	The course will increase the skills in the students like communication skills, presentation, Human skills, Leadership skills, Managerial skills etc. after the completion of the course.	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**-**	**-**
2	Increase students' capabilities and confidence to handle administrative, managerial and financial activities.	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
3	The course will assist in developing intellectual skills like creative thinking, Decision making, Leadership, Brain Storming, Motivation, etc.	**-**		**-**	**-**		**2**	**-**		**-**	**-**	**3**
4	The course will introduce skills in the students like team work, leadership skills, communication skills, body languages, positive attitude, etc.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
5	This course is designed to develop understanding of various functions of management, role of workers and engineers and providing knowledge about industrial and tax laws.	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**-**	**-**
6	It also provides the knowledge about the Entrepreneurship, Intellectual property Rights, Project and Project Report, Inventory control in manufacturing process.		**2**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**

SUBJECT NAME- Microcontroller & PLC Lab

SUBJECT CODE- DEC-651

CO1	To provide practical hands on experience with Assembly Language Programming.
CO2	To familiarize the students with interfacing of various peripheral devices with 8051 Microcontroller.
CO3	To become familiar with the Instruction set of Intel 8051 Microcontroller.
CO4	To provide practical hands on PLC & automation.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			3	2								
CO2			2	3								
CO3		2	1									
CO4				3					2			1

SUBJECT NAME- Linear Integrated Circuit Lab

SUBJECT CODE- DEC-652

CO1	Design and analyse the various linear and non-linear application of op-amp
CO2	Design and analyse filter circuits using op-amp
CO3	Design and analyse oscillators, multi vibrator and application of 555 timer circuits using op-amp.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	-	-	-	-	-	-	-	-	-
CO2	2	3	2	-	-	-	-	-	-	-	-	-
CO3	1	2	-	-	-	-	-	-	-	-	-	-

SUBJECT NAME- Wireless & Mobile Communication Lab

SUBJECT CODE- DEC-653

	Wireless & Mobile Communication
CO1	Identify the issues and challenges in the architecture of a computer network.
CO2	Understand the network synchronization and management.
CO3	Identify hardware and software components of a P.C. related to Networking.

Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	-	2	-	-	-	-	2	-	-	-	-	-
CO2	1	2		-	-	-	-	-	-	-	-	-
CO3	1	2	1	-	-	-	-	-	-	-	-	-

SUBJECT NAME- Project

SUBJECT CODE- DEC-654

CO1	Understand the professional ethics, report writing and working in a group.
CO2	Understand the importance of team to solve a problem.
CO3	Should be able to solve problem analytically and complete the task on time.
CO4	Should enhance the different capabilities like analysis observation and presentation.
CO5	Should be ready to absorbed in the industry.

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	-	-	-	3
CO2	-	-	-	-	-	-	-	-	-	-	3	-
CO3	-	-	3	-	-	-	-	-	-	-	-	-
CO4	-	-	-	3	-	-	-	-	2	-	-	1
CO5	-	-	-	-	-	-	-	-	-	-	-	3

DIPLOMA IN MECHANICAL (PRODUCTION) ENGINEERING

Programme Educational Objectives (PEOs)

1. To provide a quality education for students entering the mechanical engineering profession or Seeking careers in related fields.

2. To enable to acquire knowledge of relevant technologies and multidisciplinary fields including ethical, social and environmental issues within which the engineering is practiced.

3. To develop problem solving approach using analytical abilities, effective communication skills and team work.

4. Ability to self-learn modern engineering tools, techniques, skills and contemporary engineering practice, necessary for engineering work.

5. Actively seek out positions of leadership within their profession and their community.

Program Specific Outcomes (PSOs)

1. An ability to apply the acquired mechanical engineering knowledge for the advancement of self and society.

2. An ability to identify, analyze and solve problems relating to mechanical engineering systems together with allied engineering streams.

3. An ability to built the nation, by imparting technological inputs and managerial skills to become technocrats and entrepreneurs, build the attitude of developing new concepts on emerging fields and pursuing higher education.

4. An ability to design mechanical engineering system in various field like thermal, manufacturing, industrial, machine element and inter-disciplinary fields by using various engineering tools to meet the volatile needs of the industry and society at large.

5. Engage professionally in industries or as an entrepreneur by applying manufacturing and management practices.

Programme Outcomes (POs)

1. Ability to use engineering fundamentals, techniques, skills, modern engineering tools and measuring instruments for engineering practices. Interpret basic hydraulic, thermodynamics processes or cycles, refrigeration cycle or system and concept of machines.

2. Ability to apply knowledge of mathematics, science and engineering to analyse the problem and obtain solution.

3. Be able to design, modify and also conduct experiments as well as to analyze and interpret data.

4. To use engineering knowledge and methods including analysis, interpretation of data and synthesis of information to provide valid conclusions. Use machines, machine tools, castings, welding, jigs and fixtures for production purposes.

5. Able to use modern tools, softwares, equipments etc to analyze and obtain solution of the problems. Use electrical and electronics equipment to measure various engineering parameters.

6. Assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to practice in field of mechanical engineering.

7. Able to study the impact of engineering systems on the global, economic, environmental and societal context.

8. Be committed to professional ethics, safety, economic, environmental, managerial skills, societal and political norms.

9. To plan and execute assigned projects or tasks as a member of team or as a leader and also able to solve real life problems by the application of acquired knowledge and skills.

10. Be able to communicate effectively in oral as well as written form at workplace and with society at large.

11. To demonstrate engineering knowledge and its understanding, management principles and apply these to one's own work as a member of team or as a leader, to manage projects and in multidisciplinary environments.

12. Ability to engage in independent and lifelong learning activities in the broadest context of technological changes also in mechanical engineering and allied industry.

CO-PO MAPPING OF THEORY SUBJECTS / PRACTICAL SUBJECTS

Note: 3 Strong contribution, 2 Average contribution, 1 Low contribution.

FIRST SEMESTER

Subject Name- Applied Mathematics-1(A)

Subject Code- DMA-101

S. No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	The students learn to relate and identify the applications of Arithmetic Progression and Geometric Progression in several spheres of Human activities, like arrangement and prediction of a commodity or result.	1	3	1	1	-	-	2	-	-	-	1	1
CO 2	The students learn to use Trigonometry in measuring heights and distances, in construction and architecture, flight engineering, marine biology, application of Physics, electrical engineering, manufacturing industry, gaming industry.	2	3	-	1	3	-	-	-	-	-	-	-
CO 3	The concept of Complex Number is used in the field of Computer Science. It is used in software for coding and programming.	2	3	1	-	3	1	-	-	-	-	-	-
CO 4	Coordinate Geometry has application in the field of construction. The sketch of a building is pure geometry. It is also used for finding the distance between places and in geography also it has many	1	3	1	-	-	-	-	-	-	-	1	-

	applications. In Astrophysics to find the distance between planets.												
CO 5	Three dimensional geometry is used in various fields like in computer graphics, biotechnology and medical sciences and in different projects	3	3	1	2	3	2	-	1	-	-	-	1

Subject: Applied physics (A)

Subject code: DPH - 101

Course objective

1. Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure

2 In this student learn investigate the effect of gravity and friction on the motion of machines (mechanical) instrument etc.

3 Students learn to introduce and explain fundamental of fluids mechanics which is used in the application of aerodynamics, hydraulics, marine dynamic etc.

4 students learn energy transfer to one gear to another gear in machine and instrument etc.

5 students learn to analyses some real problem and to formulate the condition of theory of elasticity and application.

6. The student learns to formulate the 1^{st} law of thermodynamics for a close system and arrangement the change in energy in the closed system via heat and work transfer.

7. Distinguish heat transfer by conduction, convection and radiation and calculate the amount of heat energy transfer.

8. Calculate the change in moving boundary work, electrical work shop in close system.

9. Student learns about different thermal process.

Co's	Po1	Po2	Po3	Po4	Po5	Po6	Po7	Po8	Po9	Po10	Po11	Po12
1	1	1	1	1	1				1		1	1
2	3		1	1	1	2			3		3	2
3			1	1	1							
4	3		3	3	3				3		3	3
5						3		2				
6						3		3				
7			2	2	2			3				3
8	3								3		3	3
9						3						

Note: 1 Highly Matching, 2 Partially Matching, 3 Modified Matching

Subject Name- Applied Chemistry (A)

Subject Code- DCH-101

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	Basic concept of atomic structure, Matter wave concept determination of quantum numbers, periodicity of elements in periodic table	2	3	-	2	1	-	2	-		-	2	2
CO-2	Idea of various types of chemical bonding, VSEPR theory, Valence bond theory and Molecular orbital theory	2	2	-	2	1	-	-	-	1	-	2	1
CO-3	Concept of acid base theory, pH scale, buffer solution, indicators, common ion effect, electrode potential, Galvanic cell and electrolytic cell, applications of electrochemical series, corrosion and its prevention	2	3	-	2	2	1	-	2	2	-	2	2
CO-4	Rate of reaction, rate constant, molecularity and order of reaction; Understanding of	2	2	-	3	2	-	-	-	2	-	1	2

	catalyst and their use in various types of reactions; different types of solid and band theory of solids; types of crystal and imperfection of crystal												
CO-5	Understanding of soft and hard water; types of hardness present in water; analysis of water hardness and their softening by using Soda-Lime, Zeolite and Ion exchange method; disadvantage of hard water in different industry; disinfection of water: Municipality waste water treatment	2	3	-	2	-	1	-	2	2	-	2	2

Subject Name : Professional Communication

Subject Code : DPC-101

S No.	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	Introduction of the concept of communication, types skills,modern tools, etc..	3	2	1	--	1	--	--	--	--	1	---	
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	2	1	--	--								

	of business letter is also increasing. To take right decisions: Taking right decisions require accurate information.					2	--	--	--	--	3	--	
CO3	The CO of this unit is to control sentence-level error (grammar, punctuation, and spelling).	2	--	--	3	---	---	----	---	---	1	2	
CO4	It's outcome is to employ techniques of active reading, critical reading, and informal reading response for inquiry, learning, and thinking.	--	---	2	2	3	--	---	---	---	---	---	
Co5	Learning objectives focus on student performance. Action verbs that are specific, such as list, describe report, compare, demonstrate, and analyze,	1	2	---	--								

	should state the behaviors students will be expected to perform in Hindi.					---	---	---	---	---	3	2	
Co6	The conclusion of this subject is to increase the students' 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.	--	---	---	---	--	--	---	1	3	1	--	

Subject Name : Applied Mechanics-A

Subject Code : DAM-101

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	At the end of of the course students will able to solve simple problem of work and energy.	**2**	**3**	**1**	**3**	**2**	**1**	**1**	**1**	**1**		**1**	**1**
CO2	At the end of of the course students will able to understand the importance and application of various	**3**	**3**	**1**	**3**	**1**	**1**	**2**	**1**	**2**		**1**	**1**

	laws of mechanics.												
CO3	Determine the equilibrium of a particle in space using principle of laws of mechanics.	**3**	**2**	**2**	**3**		**1**	**2**	**2**	**1**		**2**	**1**
CO4	Compute the equilibrium of rigid bodies in two dimensions and in three dimensions.	**1**	**2**	**3**		**1**	**2**	**3**	**1**	**3**	**2**	**2**	
CO5	Calculate the principal moment of inertia of plane areas.	**3**	**1**		**3**	**3**		**3**	**2**	**1**		**3**	**3**
CO6	Solve the problems using equation of motions and analyze impact of elastic bodies on collision.	3	3	3	3	2	3	2		3	1		2
CO7	Solve the problems of simple system with sliding friction and calculate linear and angular acceleration of moving body in general plane motion.	2	3	1	3	3	1	1					1

Subject Name- Elementary Workshop Technology

Subject Code: DWS-101

S. No.	**CO description**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**P O6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**
CO 1	Students will have elementary understanding of workshop safety rules and process procedures.	1	3	2	2	_	_	2	--	_	2	2	2
CO 2	Students will have elementary knowledge of workshop tools and their types as well as specifications.	1	2	2	2	–	--	2	--	-	2	2	--

CO 3	Students will be familiar with different types of shops like smithy, carpentry, sheet metal, and welding etc	1	2	1	1	–	--	2	_	_	_	2	3
CO 4	Students will have understanding of welding and allied processes like soldering and brazing.	2	2	3	1	–	2	2	--	_	2	2	--
CO 5	Students will be aware of application as well as scope of different workshops in the real engineering world.	1	1	3	–	–	_	1	3	_	_	2	–
CO 6	Students will be aware of different types of defects that may occur during and after the workshop operations.	_	3	–	3	–	_	2	2	_	_	2	–

Subject Name- Applied Physics Lab

Subject Code : DPH- 151

Course objective

1. To compare the electromotive forces of two primary cell by potentiometer (E1/E2)

2. To find the surface tension of a liquid (water) by the method of CAILLARY TUBE.

3. To determine the coefficient of viscosity of given liquid by STOKES LAW.

4. To determine the value of spring constant (K) by plotting a graph between load suspended and increase in length.

5. To determine the sound in air by resonance tube the value of end correction.

6. To determine the value of g using simple pendulum.

7. To verify Kirchhoff's law.

8. To draw the I-V characteristic of P-N junction diode.

9. To determine the coefficient of friction on horizontal plane.

10. To determine the internal resistant (r) of leclanche cell by potentiometer.

Co's	Po1	Po2	Po3	Po4	Po5	Po6	Po7	Po8	Po9	Po1	Po10	Po11	Po12
1	1	1		1	2	1	1	1	1	1	1	2	1
2	1	1	1	1	2	1	1	1	1	1	1	1	2
3	1	1	1	1	2	2	1	1	1	1	1	1	1
4	1	1	1	1	2	2	2	1	1	1	1	1	1
5	1	1	1	1	2	2	2	2	1	2	2	2	2
6	1	1	2	2	1		3	2	1	2	2	3	1
7		1	2	2	1		3	3	1	1	1	3	3
8	1	1	1	1	2			1	1	1	1		3
9	1	1	1	1		1	2		1	2	2	1	1
10	1	1	2	2	2		3	3	1	1	1	2	3

Note: 1 Highly Matching, 2 Partially Matching, 3 Modified Matching

Subject Name- Workshop practice

Subject Code : DWS-151

S. No.	CO description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12
CO1	To acquire skills in basic engineering practice.	1	–	–	1	–	2	–	–	–	–	–	–

CO2	To identify the hand tools and instruments.	1	_	–		–	2	_	_	_	_	_	–
CO3	To acquire measuring skills.	1	_	–	1	–	2	_	_	_	_	_	–
CO4	To acquire practical skills in the trades.	1	_	–	1	–	2	2	--	_	2	_	--
CO5	To provides the knowledge of job materials in various shops.	2	_	–	–	–	3	1	3	_	_	_	–
CO6	To provides the knowledge of core technical subjects for making and working of any type of project.	3	_	–	–	–	2	2	2	_	_	_	–

Subject Name- Applied Mechanics Lab

Subject Code : DAM-151

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Learn basics of machine mechanics.	**1**		**1**	**3**	**1**	**1**	**2**	**1**	**1**	**1**	**2**	**2**
CO2	Students learn how to	**2**		**1**			**1**	**2**				**2**	**1**

	operate different lifting machines.												
CO3	Students learn how to calculate mechanical advantage of different lifting machines.	**1**	**1**	**1**				**1**		**3**		**2**	**1**
CO4	Learn basics of principle of moments, resolution of forces and coefficient friction.	**1**	**1**	**1**	**1**	**3**		**1**		**3**		**2**	**2**
CO5	Students learn about efficiency of different machines.	**1**	**1**	**1**		**3**		**2**		**1**		**3**	**1**

Subject Name- Professional Communication Lab

subject code : DPC-151

S No.	CO Dsecriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	Introduction of International Phonetic Alphabet and Pronunciation practice.	3	2	2	--	--	--	--	--	--	1	--	
CO2	From a psychological perspective, objective and outcome of self description in formal communication situations means that you are focusing	1	2	--	3								

	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 oft en include the following: To establish credibility with your audience. To communicate information clearly to your audience. To persuade and/or influence your	3	1	--	2								

	audience					3	---	---	--	---	1	--	
Co5	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.	2	--	----	1	2	---	--	--	---	3	1	
Co6	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	2	1	--	--	--	--	---	--	1	3	1	

SECOND SEMESTER

Subject Name- Applied Mathematics-I (B)

Subject Code- DMA-201

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Here students are getting the knowledge of Graphs, continuity, and differentiation by which they will be able to find areas of any surface.	3	3	3	2	-	-	-	-	1	-	-	-
CO2	By getting full knowledge of Tangent and normals students will be able to use it in daily lives and further studies in Architecture,engineering, Civil Engineering etc.	2	3	3	1	-	-	1	-	-	-	-	-
CO3	Definite and Indefinite integral knowledge makes students wide in solving problems related to big summations and areas related problems. Regarding applications students will be able to solve problems like 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 will be easily solved.	2	3	1	1	1	1	-	1	2	-	1	-
CO4	Applications of Integration will lead students to get a good knowledge of finding areas, volume etc	3	3	2	2	2	1	1	1	2	1	-	1

CO5	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.	2	3	3	2	1	-	1	1	1	1	1	-

Subject Name- Applied Physics -(B)

Subject Cod -DPH-201

1. Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure

2. Student learn to analysis to effect of building acoustic condition

3. Student learn about application of ultrasound in various field like SONAR, medical and research workand sound signal etc.

4. The student learn to introduce and overview of optical fiber and process of transmission of signal and application of various field.

5. Student learns to investigate broken telegraph wire with the help of post office box.

6. Student learn to simplify the complicated circuit by using Kirchhoff's law

7. Student will be able to distinguish among various student in the basis of magnetic properties like Dia, Para and ferromagnetic and build the temporary and permanent magnet.

8. Student learns about LASER and various applications in various fields like medical etc.

9. Student learns about basic electronics which promote to learn the characteristics of transistor (amplifier).

10. X-ray and various properties in various field like medical engineering and research center etc.

Co's	Po1	Po2	Po3	Po4	Po5	Po6	Po7	Po8	Po9	Po10	Po11	Po12
1	1	1	1	1	1				1		1	1
2	3		1	1	1	2			3		3	2
3			1	1	1							
4	3		3	3	3				3		3	3
5						3		2				
6						3		3				
7			2	2	2			3				3
8	3								3		3	3
9						3						
10	3	2	2	2	2				3		3	2

Note: 1 Highly Matching, 2 Partially Matching, 3 Modified Matching

Subject Name- Applied Chemistry (B)

Subject Code- DCH-201

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	Classification and properties of good fuels, calorific value and its determination, refining of petroleum, Benzol, power alcohol, Knocking of engine and anti-knocking agents used to reduce knocking, octane and cetane number, Bergius and Fischer Tropsch's method for hydrogenation of coal, Preparation and uses of Coal gas , oil gas, water gas biogas, LPG and CNG	3	2	1	2	-	-	-	-	2	-	2	2
CO-2	Concept of Colloidal state of matters, preparation of colloids by physical and chemical method, protective colloids, properties of colloids: Brownian movement, Tyndal effect, Electrophoresis and Coagulation. Preparation of emulsion and its application;	3	3	2	2	-	1	-	-	2	-	3	2

	Lubricants and their types; Function, mechanism and its application in different industry; additive compounds in lubricant												
CO-3	IUPAC nomenclature of organic compounds, preparation and uses of ethane, ethane, ethyne, benzene and toluene.	2	3	3	-	-	-	-	-	2	-	2	1
CO-4	Concept of electrophiles and nucleophiles, reaction intermediates: free radical, carbocation, carbanion mechanism of electrophilic and nucleophilic substitution reaction, addition, and elimination reactions.	3	3	2	2	-	-	-	-	1	-	2	-
CO-5	Polymers, synthesis properties and uses of addition and condensation polymers, biopolymers, manufacturing of soap, detergents, Preparation and uses of explosives: TNT, RDX, Dynamite, Synthesis and use of paint and varnish	3	3	2	3	-	1	-	-	2	-	2	1

Subject Name- Engineering Drawing

Subject Code- DED-201

S.No.	**CO Description**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	Students' ability in legible writing letters and numbers will be improved.	3	2	2		2				3	2		

CO2	Students' ability to perform basic sketching techniques and mechanical component drawing will be improved.	3	3	2			2		3	2			
CO3	Students will be able to draw orthographic projections of different objects irrespective of number of dimensions and to develop pictorial views.	2	3			2			2	3	2		
CO4	Students' ability to produce engineered drawing of any newly designed object will be improved.	2	3	2		2			2	3	2		

Subject Name- Applied Mechanics- (B)

Subject Code- DAM-201

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Understanding different units and its use in other subject.	**2**	**3**	**1**	**3**	**2**	**1**	**1**	**1**	**1**		**1**	**1**
CO2	Application of various law in practical aspect.	**3**	**3**	**1**	**3**	**1**	**1**	**2**	**1**	**2**		**1**	**1**
CO3	Application of various theory	**3**	**2**	**2**	**3**		**1**	**2**	**2**	**1**		**2**	**1**
CO4	Practical behavior of friction.	**1**	**2**	**3**		**1**	**2**	**3**	**1**	**3**	**2**	**2**	
CO5	Analyse couple and moment in different aspect and Its use.	**3**	**1**		**3**	**3**		**3**	**2**	**1**		**3**	**3**

Subject Name- Elements Of Mechanical Engineering

Subject Code-DME-201

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Understand about the working, functions and applications of equipments used in daily life.	**2**	**3**	**1**	**3**	**2**	**1**	**1**	**1**	**1**		**1**	**1**
CO2	Identify the broad context of Mechanical engineering problems, including describing the problem conditions and identifying possible contributing factors.	**3**	**3**	**1**	**3**	**1**	**1**	**2**	**1**	**2**		**1**	**1**
CO3	Understand the fundamental elements of Mechanical engineering systems, system components and processes, with a good understanding of associated safety, quality, schedule and cost considerations.	**3**	**2**	**2**	**3**	**2**	**1**	**2**	**2**	**1**		**2**	**1**
CO4	Employ mathematics, science, and computing techniques in a systematic, comprehensive, and Rigorous manner to support the study and solution of Mechanical engineering problems.	**1**	**2**	**3**	**3**	**1**	**2**	**3**	**1**	**3**	**2**	**2**	**2**
CO5	Synthesize analysis results to provide constructive and creative engineering solutions that reflect social and environmental sensitivities.	**3**	**1**	**2**	**3**	**3**	**1**	**3**	**2**	**1**		**3**	**3**
CO6	Exhibit good teamwork skills and serve as effective members of multidisciplinary project teams.	3	3	3	3	2	3	2	2	3	1	3	2

Subject Name- Applied Chemistry Lab

Subject Code- DCH- 251

S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	Analysis of acidic and basic radicals of inorganic mixture	3	2	3	2	-	-	2	2	-	-	-	2
CO-2	Determination of chloride content by Mohr's method in supplied water	3	3	2	-	-	-	-	-	-	-	-	-
CO-3	Testing of total hardness of water sample by EDTA titration method in terms of $CaCO_3$	3	3	3	-	-	1	-	1	-	-	-	2
CO-4	Analysis of temporary hardness in water sample through O'Hener's method.	3	3	2	2	-	-	-	1	-	-	-	2
CO-5	Dissolve oxygen analysis in water sample	3	3	2	2	-	1	1	2	-	-	-	1
CO-6	Analysis of strength of HCl solution through NaOH solution by using pH meter	3	2	3	1	2	-	-	-	-	-	-	-

Subject Name- Elements Of Mechanical Engineering Lab

Subject Code- DME-251

	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Understand about the working, functions and applications of machine components.	**1**	**3**	**1**	**3**	**2**	**1**	**1**	**1**	**1**	**-----**	**1**	**1**
CO2	Identify the broad context of	**2**	**2**	**1**	**3**	**1**	**1**	**2**	**1**	**1**	**-----**	**1**	**1**

	Mechanical engineering problems, including describing the problem conditions and related factors.												
CO3	Understand the fundamental elements of Mechanical engineering systems, system components and processes.	**3**	**2**	**2**	**3**	**2**	**1**	**2**	**2**	**1**	**-----**	**2**	**1**
CO4	Employ mathematics, science, and computing techniques in a systematic way to support the study and solution of Mechanical engineering problems.	**1**	**2**	**2**	**3**	**1**	**2**	**2**	**1**	**3**	**2**	**2**	**2**

Subject Name- Computer Application Lab

Subject Code- DCS-251

S. No	CO DESCRIPTION	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO 1	Students become familiar with the basic fundamentals and concepts of Computer	1	2	-	-	3	-	-	-	-	-	-	
CO 2	Practical knowledge of the MS Office package, viz. MS Word, MS Excel and MS PowerPoint.	1	1	-	-	3	-	-	-	-	-	-	
CO 3	Students are trained with the basic concepts of the programming language.	1	2	-	-	3	-	-	-	-	-	-	

CO 4	The course is designed to provide complete knowledge of C language.	1	1	-	-	3	-	-	-	-	-	-	
CO 5	Students will be able to develop logics which will help them to create basic programs and applications in C.	1	2	-	-	3	-	-	-	2	-	-	
CO 6	By learning the basic programming constructs they can easily switch to any other language in future.	1	1	-	-	3	-	-	-	-	-	-	

Subject Name- Basic Computer Aided Design Lab

Subject Code- DCAD-251

Sr No.	**CO Description**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	Students will develop good communication skills and team work.	**3**	**2**	**3**	**2**	**2**	**1**	**1**	**1**	**1**		**1**	**1**
CO2	Students will become familiar with office practice and standards.	**2**	**2**	**3**	**2**	**1**	**1**	**2**	**1**	**2**		**1**	**1**
CO3	Students will become familiar with Auto Cad's two dimensional drawings.	**1**	**3**	**1**	**2**	**2**	**1**	**2**	**2**	**1**		**2**	**1**
CO4	Students ability to convert sketches into engineered drawings will increase.	**2**	**3**	**2**	**2**	**1**	**2**	**3**	**1**	**3**	**2**	**2**	**2**
CO5	Students will be able to draw orthographic projections and sections..	**2**	**2**	**3**	**2**	**3**	**1**	**3**	**2**	**1**		**3**	**3**

THIRD SEMESTER

Subject Name- Applied Mathematics-II (A)

Subject Code- DMA-301

S. No.	CO Description	PO1	PO2	PO 3	PO4	PO5	PO6	PO7	PO8	PO 9	PO10	PO 11	PO 12
CO 1	The students learn about the application of Matrices in Civil Engineering and Mechanical Engineering for recording Math reports.	1	3	-	1	-	-	-	-	-	-	-	-
CO 2	The students gain the skill of applying the known results of Matrix algebra for the study of structural properties of graphs and applications of graph theory such as electrical network analysis in expressing a problem.	3	2	-	-	3	-	-	-	-	-	-	-
CO 3	The students use matrix transforms in computer graphics. Software and hardware graphics processor uses matrices for performing operations such as scaling, translation and rotation.	-	3	-	-	1	-	-	-	-	--	-	-

CO 4	The students learn to form and solve problems using differential equations of Electrical circuits, decay of radioactive elements, Motion under gravity, Newton's law of cooling and simple Harmonic motion.	3	1	-	-	-	-	-	-	1	-	-	-
CO 5	To motivate students on the relevance of differential equations in various engineering disciplines for example one-dimensional transient heat conduction.	3	3	-	2	-	-	-	-	1	-	-	-

Subject Name: Mechanics of Solids

Subject Code: DME-301

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Understand the fundamental concepts of stress and strain and the relationship between both through the strain-stress equations in order to solve problems for simple elastic solids.	**2**	**3**	**1**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**1**

CO2	Calculate and represent the stress diagrams in bars and simple structures	**2**	**2**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	Solve problems relating to pure and non-uniform bending of beams and other simple structures.	**2**	**3**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	Solve problems relating to Torsional deformation of bars and other simple three dimensional structures.	**2**	**3**	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Understand the concept of Buckling and Crushing and be able to solve the problems related to column/Struts.	**2**	**3**	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO6	Understand the concept of Strain Energy and be able to solve the problems related to simple structures.	**2**	**3**	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Subject Name- Material Science-1

Subject Code: DME-302

S. No.	**CO description**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO 10**	**PO 11**	**PO 12**
CO1	Understand the basic concept of material science .	3	3	--	--		1	3	--	1	1	1	
CO2	Student should be aware with properties of materials.	3	1	3	3	1	--	3	1	--	--		--
CO3	Student should be able to information about prevention of atmospheric corrosion and	2	--	1	2	2	3	3	1		3	3	--

	rusting.												
CO4	Understand different non destructive testing methods.	3	2	--	1	1		--	1	2			2

Subject Name: Thermal Engineering - I

Subject Code: DME-303

S.No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Thermal engineering is a branch within mechanical engineering that is being pursued widely at the postgraduate level.	3	3		2	2		2	2	2			
CO2	As a thermal engineering student, you will study heating and cooling processes; and the conversion of heat into various energies including mechanical, chemical and electrical energy.		3	3			3	2					
CO3	This is a discipline which finds many applications in our daily life. For example, it is used to control the heat and temperature rise in computer by keeping the microprocessor in the CPU adequately cool	3	3				2	2		3	2		

CO4	Thermal engineers assist in designing heating systems and explore ways to improve on and take advantage of renewable energy sources.	3	2	3			2		2	2			
CO5	Thermal engineers find innovative solutions to build next-generation cooling designs that produce the desired temperatures are compact in size, cost-effective as well as adaptable to fit Different system designs.	3			2	2	3		3	3	2		

Subject Name: Mechanical Engineering Drawing

Subject code: DME-304

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Basic knowledge about how to read part drawing and assembly drawing.	**3**	**2**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	Knowledge about various drawing symbols like welding, riveting, materials, general fittings etc.	**3**	**1**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

CO3	Draw free hand sketches of various kinds of objects.	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	To draw assembly drawing of various machine components.	**3**	**2**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Knowledge and use of auto cad commands to draw various objects.	**3**	**2**	**3**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Subject Name: Basic Electrical Engineering

Subject Code: DME -305

COURSE OUTCOMES	
CO-1	Basic concept of parameters used in AC circuits.
CO-2	Solution of electrical circuits using different network theorems.
CO-3	Measurement of different electrical quantities using different electrical measuring instruments
CO-4	Basic concept of three phase circuit and power measurement. Introduction to electrical machines and their applications.

	PO-1	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**	**PO-11**	**PO-12**
CO-1	**3**	**---**	**---**	**---**	**3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
CO-2	**3**	**---**	**---**	**---**	**3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**

CO-3	**3**	**---**	**---**	**---**	**3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
CO-4	**3**	**---**	**---**	**---**	**3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**

Subject Name: Mechanics of Solids Lab

Subject Code : DME-351

Sr No.	**CO Description**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	Calculate the values of yield strength, percentage elongation, breaking strength and ultimate strength, percentage reduction in area of the given specimen under tension test on universal testing machine.	**3**	**2**	**-**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	Conduct the Rockwell hardness test to measure the hardness of the given specimen.	**2**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

CO3	Conduct the Brinell hardness test to measure the hardness of the given specimen.	**2**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	Conduct the spring test to evaluate the various parameter of the open coil and closed coil spring.	**2**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Conduct the torsion test to determine the modulus of rigidity of given specimen.	**2**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO6	Study the microstructure and characteristics of specimen through metallurgical microscope	**3**	**-**	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO7	Conduct the Izod and charpy test to evaluate the impact strength of specimen.	**2**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Subject Name: Thermal Engineering Lab

Subject Code: DME-353

S.No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Compute the property of steam and dryness fraction using suitable tests.		2		3		3	3		2	3		
CO2	Demonstrate the performance of internal combustion engines and air compressors.	3	2			2			2	3			
CO3	Explain about the real time applications of solid medium heat transfer.			3	3				2				
CO4	Express the knowledge of design skills of thermal devices	3		3	2					2	3		
CO5	Interpret the emission characteristics of combustion engines					3	3		3	3	2		

Subject Name: Basic Electrical Engineering Lab

Subject Code: DME -355

COURSE OUTCOMES	
CO-1	Study and verification of characteristics of semiconductor devices like diode and transistor.
CO-2	Verification of different network theorems on simple electrical circuits.

CO-3	Operation and testing of electrical machines like transformer, induction motor.
CO-4	Energy meter and their operations

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
CO-1	**3**	**---**	**---**	**---**	**3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
CO-2	**3**	**---**	**---**	**---**	**3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
CO-3	**3**	**---**	**---**	**---**	**3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
CO-4	**3**	**---**	**---**	**---**	**3**	**---**	**---**	**---**	**---**	**---**	**---**	**---**

FOURTH SEMESTER

Subject Name- Applied Mathematics-II (B)

Subject Code- DMA-401

S. No.	CO Description	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	Identification of surface conicoids and Jacobians are used in designing and forging a robot.	1	2	-	1	1	-	-	-	-	-	-	-
CO 2	Vector calculus or vector analysis is used in the description of electromagnetic fields. Robotics also have vector calculus application. In the discipline of electronics/ electrical when there is a requirement of calculating length, area, volume involving vector as parameters.	1	2	1	1	-	-	-	-	1	-	-	-
CO 3	A simple Laplace transform is conducted while sending signals over any two-way communication medium (FM/AM stereo-2-way radio sets, cellular phones.)	1	2	1	-	-	-	-	-	1	-	-	-
CO 4	Fourier series is used in signal processing.	1	2	2	1	-	-	-	-	1	-	1	-
CO 5	Probability models are useful anywhere that you cannot model a situation deterministically.	1	2	-	1	-	-	-	-	1	-	-	-

Subject Name: Hydraulics &Hydraulic Machines

Subject Code: DME-401

S.No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Define properties of fluid and its classification.	3	2	2	2	1	-	2	-	-	-	-	-
CO2	Application of Bernoulli principle.	3	2	2	2	1	-	2	-	-	-	-	-
CO3	Analyse different type of flow.	3	3	3	2	1	1	2	-	-	-	-	1
CO4	Basic introduction of different hydraulically operated machin	3	1	2	3	3	1	2	-	-	-	-	1
CO5	Introduction of different type of channel.	3	1	2	3	3	1	2	-	-	-	-	1

SUBJECT NAME- Material Science-II

Subject Code: DME-402

S. No.	CO description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO 12
CO1	It provides a basis for understanding how structure/ property/ processing relationships are developed and used for different types of materials.	3	2	1	2	1	1	3	2	-	1	1	

CO2	It provides a basis for testing of metal alloys.	3	-		3	1	--	3	1	--	--		--
CO3	It illustrates how to improve properties of metals.	2	--	1	2			3	1			3	1
CO4	It provides properties, characteristics and use of miscellaneous materials.	3		2	2	1	3	--	1			1	2

Subject Name: Thermal Engineering –II

Subject Code: DME-403

S.No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Thermal engineering applied in the field of Heating, ventilation, and air conditioning (HVAC)	3			2	2				3			
CO2	Thermal engineering applied in the field of boiler design.		2	2	3		3		2	2			
CO3	Thermal engineering applied in the field of Solar heating and solar power plant.	3	3	2			2			2	2		
CO4	Thermal engineering applied in the field of Combustion engines.		3	3			2			2			

CO5	Thermal engineering applied in the field of Thermal Power plant, Cooling systems and Heat exchangers.			3		3			2	3	2		

Subject Name: Manufacturing process

Subject Code: DME-404

S. No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	It provides a basis to select appropriate manufacturing process to manufacture any component.	3	2	1	2	1	2	3	2	1	1	1	
CO2	Interpret foundry practices like pattern making, core making, mould making.	3	-	2	1	-	1	-	1	2	--	1	2
CO3	Differentiate metal forming processes such as forging, extrusion, and drawing processes.	2	--	1	2			3	1			3	1
CO4	Understand different sheet metal working processes.	3		2	2	1	3	--	1			1	2

Subject Name: Basics Electronics Engineering

Subject Code: DME-405

Course Outcomes: After the completion of the course the student will be able to:

CO1	Identify the basic terminology associated with electronics and explain the basic concepts of Semiconductor diodes such as p-n junction.
CO2	To apply the basics of diode to design the various circuits such as rectifier, clipper-clamper and filters using it and their detailed performance analysis.
CO3	Draw and explain the structure of BJT & FET with characteristics of different configurations.
CO4	Describe and analyse the application of transistors for Current and voltage amplification.

CO5	Perform various digital operations using Boolean algebra and analyse different signal parameters using CRO.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	2									
CO2		2	2	1								
CO3		2	2									
CO4		2	1									
CO5		1	2									

Subject Name: Hydraulics Lab

Subject Code: DME-451

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Learn law of hydrostatics and its application	**1**		**2**	**1**	**1**			**2**	**3**		**2**	**2**
CO2	Students learn how Bernoulli's experiment perform exp.	**3**	**2**	**2**	**1**		**1**		**2**	**2**		**2**	**1**
CO3	Understand the different theory of working of different machine.	**2**	**2**		**1**		**1**			**1**		**1**	
CO4	Student will able to solve different numerical problem of hydraulics.	**2**	**1**	**2**		**1**			**1**			**1**	
CO5	Understand basic component of hydraulic machine.	**2**	**1**	**1**		**1**			**1**			**2**	

Subject Name- Workshop (Manufacturing process)

Subject Code: DME-452

S. No.	CO description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	Students will be able to make pattern, core, mould etc.	3		3	3	2	1	2	1		1	1	
CO2	Students will be able to understand how sand testing is performed.	3		3	3	1	--	3	1	--	1	1	--
CO3	Students should be able to do different welding.	2	2	1	2	2	3	2			2	2	--
CO4	Understand process of casting	3	1	2	2	1	2	--		2			2

Subject Name- Basic Electronics Engineering Lab

Subject Code: DME-455

CO1	Identify and study of various IC packages of logic gates.
CO2	Plot the characteristics of electronic devices to understand their behaviour.
CO3	Design and test half wave and full wave rectifiers with filters.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**1**			**2**								
CO2	**2**		**2**									
CO3	**1**		**2**	**1**								

FIFTH SEMESTER

Subject Name-Kinematics of Machine

Subject Code - DME-501

S. No.	CO description	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	Identify mechanism in real life application	1	3	--	--	1	--	--	--	2	--	--	--
CO2	Perform kinematic analysis of simple mechanisms	1	--	2	--	1	--	--	2	--	--	-	--
CO3	Perform statics and dynamics force analysis of slider crank mechanisms	--	3	--	--	--	--	--	--	3	1	--	--
CO4	Determine moment of inertia of rigid bodies experimentally	1	--	--	2	--	2	--	--	--	--	2	--
CO5	Analyze velocity and acceleration of mechanisms by vector and graphical method	1		2	-	3	-	-	-	-	-	-	-

Subject Name- Machine Tools Technology & Maintenance

Subject Code - DME-502

S. No.	CO description	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	Students will be able to operate lathe machine.	2	3	--	1	1	--	--	--	3	--	2	2
CO2	Students will be able to perform operations like shaping drilling, boring, grinding, threading, etc.	1	2	--	1	2	--	--	--	--	--	3	--
CO3	Students will be able to understand the milling operation and indexing.	_	2	--	1	--	--	--	1		_	_	3
CO4	Students will be able to demonstrate concepts and use of jigs and fixtures. .	2	1	--	2	--	2	--	--	--	--	2	--
CO5	Students will be able to understand concepts and applications of CNC and FMS.	_	1	_	1	_	_	—	_	_	_	_	_

Subject Name-Design & Estimation

Subject Code - DME-503

S. No.	CO description	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	Ability to apply knowledge of engineering graphics, machine drawing, basic science & basic applied mathematics, basic machining processes, material science, for design procedures of mechanical component use in industries & incorporated in machine design.	2	3	--	--	1	--	--	--	3	--	--	--
CO2	Understanding the mechanism of fatigue failure of parts & is used in mechanical component design. Be able to estimate endurance strength of ductile and brittle materials	1	--	--	--	2	--	--	--	--	--	3	--
CO3	Understand different welded and riveted joint structure and able to apply its knowledge to analyze its strength.	2	--	--	--	--	--	--	1		3	3	--

CO4	Be able to apply knowledge of the stresses & strain of mechanical component.	2	--	--	2	--	2	--	--	--	--	1	--

Subject Name-Computer Aided Design & Manufacturing

Subject Code - DME-507

S. No.	CO description	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	Identify proper computer graphics techniques for geometric modeling.	3	1	1	2	2	1	1	1	1		1	1
CO2	Transform, manipulate objects & store and manage data.	2	2	1	2	1	1	2	1	2		1	1
CO3	CAM Tool path Creation and NC- G code output.	2	3	2	2	2	1	2	2	1		2	1
CO4	Use rapid prototyping and tooling concepts in any real life applications.	2	2	1	1	1	2	3	1	3	2	2	2
CO5	Identify the tools for Analysis of a complex engineering component	1	1	3	2	3	1	3	2	1		3	3

Subject Name: Production Technology
Subject Code: DME- 505

Course Outcomes -

Learner will be able to…
1. Demonstrate understanding of casting process
2. Illustrate principles of forming processes
3. Demonstrate applications of various types of welding processes.
4. Differentiate chip forming processes such as turning, milling, drilling, etc.
5. Illustrate the concept of producing polymer components and ceramic components.
6. Illustrate plant layout and management aspects related to industrial purpose.

CO- PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	-	-	-	1	-		-	-	-	-	-	-
2	-	-	-	1	-	-	-	-	-	-	-	-
3	2	-	-	1	-	-	-	-	-	-	-	-
4	2	-	-	1	-	-	-	-	-	-	-	-
5	-	-	-	1	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	2	3	-	2	-

Subject Name: Automobile Engine
Subject Code: DME -506

Course Outcomes

Learner will be able to…
1- Illustrate the types and working of clutch and transmission system.
2- Demonstrate the working of different types of steering gears and braking systems.
3- Illustrate the constructional features of wheels, tyres and suspension systems.
4- Demonstrate the understanding of types of storage, charging and starting systems.
5- Identify the type of body and chassis of an automobile.

6- Comprehend the different technological advances in automobile.

CO- PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
2	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
4	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
5	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
6	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**2**

Subject Name: Mechanical Workshop
Subject Code: DWS-551

Course Outcomes

1- To acquire skills in basic engineering practice.

2- To identify the hand tools and instruments.

3- To acquire measuring skills.

4- To acquire practical skills in the trades.

5- To provides the knowledge of job materials in various shops.

6- To provides the knowledge of core technical subjects for making and working of any type of project.

CO- PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	1	-	-	1	-	2	-	-	-	-	-	-
2	1	-	-	1	-	2	-	-	-	-	-	-
3	1	-	-	1	-	2	-	-	-	-	-	-
4	1	-	-	1	-	2	-	-	-	-	-	-
5	2	-	-	-	-	3	-	-	-	-	-	-
6	3	-	-	-	-	2	-	-	-	-	-	-

Subject Name: CAD Lab
Subject Code: DME-554

Sr No.	CO Description	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	Learn basic auto Cad skills.	3	1	3	2	3	1	1	1	1		1	1
CO2	Students learn how to operate Auto Cad and transform sketches and technical data into electronic drawings.	2	2	2	2	2	1	2	1	2		1	1
CO3	Understand modeling of curves, surfaces and solids	1	3	3	1	1	1	2	2	1		2	1
CO4	Transform, manipulate the object	3	3	2	2	3	2	3	1	3	2	2	2

	and understand rapid prototyping and tooling concept in any real life application.												
CO5	Understand FEM based problems.	**1**	**1**	**1**	**1**	**2**	**1**	**3**	**2**	**1**		**3**	**3**

Subject Name: Automobile Lab
Subject code: DME-556

Course Outcomes

1-Learn basics of automobiles.

2-Students learn how electrical components of an automobile works.

3-Students learn how accessories of an automobile works.

4-Learn basics of using stroboscope and tachometer.

5-Students learn about fault finding and wheel alignment.

CO- PO mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
2	**3**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
3	**3**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
4	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
5	**-**	**1**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
6	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

SIXTH SEMESTER

Subject Name: Dynamics of Machine
Subject Code: DME-601

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Draw inversions and determine velocity and acceleration of different mechanisms .	**2**	**3**	**1**	**3**	**2**	**1**	**1**	**1**	**1**		**1**	**1**
CO2	Construct different types of cam profile for a given data.	**3**	**3**	**1**	**3**	**1**	**1**	**2**	**1**	**2**		**1**	**1**
CO3	Calculate loss of power due to friction in various machine elements.	**3**	**2**	**2**	**3**	**2**	**1**	**2**	**2**	**1**		**2**	**1**
CO4	Solve problems on power transmission .	**1**	**2**	**3**	**3**	**1**	**2**	**3**	**1**	**3**	**2**	**2**	**2**
CO5	Construct turning moment diagram.	**3**	**1**	**2**	**3**	**3**	**1**	**3**	**2**	**1**		**3**	**3**
CO6	Calculate balancing mass and its position.	3	3	3	3	2	3	2	2	3	1	3	2
CO7	Identify different	2	3	1	3	3	1	1					

	types of vibration, their causes and remedies.												

Subject Name- Refrigeration & Air Conditioning

Subject code: DME-602

S. No.	CO description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Students will be able to demonstrate fundamental principles of refrigeration and air conditioning.	2	3	2	_	_	2	3	--	2	2	2	2
CO2	Students will be able to identify and locate various important components of the refrigeration and air conditioning system.	1	2	2	–	–	--	--	--	-2	2	2	--
CO3	Students will be able to illustrate various refrigeration and air conditioning processes by using psychometric chart.	1	2	2	–	–	--	--	_		_	_	3
CO4	Students will be able to design Air Conditioning system using cooling load calculations. .	2	2	2	–	–	2	-3	--	2	2	2	--

CO5	Students will be able to estimate air conditioning system parameters.	1	1	2	–	–	–	—	–	–	–	–	–
CO6	Students will be able to demonstrate understanding of duct design concepts.												

SUBJECT NAME- Metrology & Quality Control

Subject code: DME-607

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Demonstrate inspection methods and different gauges.	**1**	**2**	**2**	**3**	**2**	**1**	**1**	**1**	**1**		**1**	**1**
CO2	Illustrate working principle of measuring instruments and calibration methodology.	**2**	**2**	**2**	**3**	**1**	**1**	**2**	**1**	**2**		**1**	**1**
CO3	Illustrate basic concepts and statistical methods in quality control.	**2**	**3**	**3**	**3**	**2**	**1**	**2**	**2**	**1**		**2**	**1**
CO4	Demonstrate characteristics of screw threads, gear profile, and tool profile.	**2**	**3**	**2**	**3**	**1**	**2**	**3**	**1**	**3**	**2**	**2**	**2**
CO5	Illustrate the different sampling techniques in quality control.	**1**	**2**	**3**	**3**	**3**	**1**	**3**	**2**	**1**		**3**	**3**
CO6	Illustrate different nondestructive techniques used for quality evaluation.	2	2	2	3	2	3	2	2	3	1	3	2

Subject name: Industrial Engineering & Safety

Subject code: DME-604

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	How to apply Work study techniques for improving production	**2**	**-**	**3**	**3**	**2**	**3**	**1**	**2**	**3**	**-**	**2**	**1**
CO2	To study about Knowledge and skill required for effective utilization of available resources in an industry.	**3**	**-**	**1**	**3**	**2**	**1**	**2**	**2**	**3**	**-**	**3**	**1**
CO3	To study the need, importance and functions the production, planning and control in the industries.	**3**	**2**	**2**	**3**	**2**	**2**	**1**	**2**	**3**	**-**	**2**	**1**
CO4	To study the control charts for variables and attributes.	**2**	**3**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	To make students aware of industrial safety requirement, causes of accidents and preventive steps	**-**	**-**	**-**	**-**	**-**	**3**	**1**	**-**	**-**	**-**	**-**	**1**
CO6	To study about emerging trends like ISO, TQM, SQCs, Value Engineering technique etc.	**2**	**3**	**-**	**2**	**2**	**-**	**-**	**-**	**2**	**-**	**2**	**-**

SUBJECT NAME- Industrial Management & Entrepreneurship Development
Subject code: DIM 601

CO	Co- Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	The course will increase the skills in the students like communication skills, presentation, Human skills, Leadership skills, Managerial skills etc. after the completion of the course.	**1**	**-**	**-**	**-**	**-**		**-**	**3**	**-**	**3**	**3**	
2	Increase students' capabilities and confidence to handle administrative, managerial and financial activities.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**	**3**	
3	The course will assist in developing intellectual skills like creative thinking, Decision making, Leadership, Brain Storming, Motivation, etc.	**-**	**2**	**2**	**-**	**-**	**-**	**-**		**2**	**-**	**-**	
4	The course will introduce skills in the students like team work, leadership skills, communication skills, body languages, positive attitude, etc.	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	

5	This course is designed to develop understanding of various functions of management, role of workers and engineers and providing knowledge about industrial and tax laws.	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**3**	**-**	**-**	**-**	
6	It also provides the knowledge about the Entrepreneurship, Intellectual property Rights, Project and Project Report, Inventory control in manufacturing process.	**-**	**-**	**1**	**3**	**-**	**-**	**3**	**-**	**-**	**-**	**3**	

Subject Name- Environmental Education & Disaster Management

Subject code: DEV-601

CO	CO DESCRIPTION	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	Understand the natural environment and its relationships with human activities.	-	2	-	-	-	-	3	3	-	-	---	-
2	Characterize and analyze human impacts on the environment.	-	1	-	-	-	-	3	2	-	-	-	-
3	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.	-	3	-	-	-	-	1	2	-	-	-	-
4	Capacity to integrate knowledge and to	-	1	-	-	-	-	2	3	-	-	-	-

	analyse, evaluate and manage the different public health aspects of disaster events at a local and global levels.												
5	Capacity to obtain, analyse, and communicate information on risks, relief needs and lessons learned from earlier disasters in order to formulate strategies for mitigation in future scenarios	-	2	-	-	-	-	3	1	-	-	-	-

SUBJECT NAME- Refrigeration & Air Conditioning Lab

Subject code: DME-652

S.No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	The fundamental principles and applications of refrigeration and air conditioning system.	3		2			3	2					
CO2	Obtain cooling capacity and coefficient of performance by conducting test on vapor compression refrigeration systems		3	3				3	2				

CO3	Present the properties, applications and environmental issues of different refrigerants		3	2	3			2		3	3		
CO4	Operate and analyze the refrigeration and air conditioning systems.			2		3			2		3		

Subject Name- Metrology lab

Subject code: DME-653

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Student will become familiar with the different instruments that are available for linear, angular, roundness and roughness measurements they will be able to select and use the appropriate measuring instrument according to a specific requirement (in terms of	**3**	**1**	**3**	**2**	**3**	**-**	**1**	**-**	**1**	**-**	**-**	**-**

	accuracy)												
CO2	Students will be able to design tolerances and fits for selected product quality. They can choose Appropriate method and instruments for inspection of various gear elements and thread elements.	**2**	**1**	**3**	**2**	**2**	**-**	**-**	**-**	**1**	**-**	**-**	**1**
CO3	They can understand the standards of length, angles, they can understand the evaluation of surface finish and measure the parts with various comparators	**2**	**1**	**3**	**2**	**2**	**-**	**-**	**-**	**1**	**-**	**-**	**-**
CO4	Demonstrate characteristics of screw threads, gear profile, and tool profile	**2**	**-**	**3**	**2**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**
CO5	Demonstrate inspection methods and different gauges and working principle of measuring	**3**	**2**	**3**	**3**	**2**	**1**	**1**	**1**	**-**	**1**	**-**	**-**

	instruments and calibration methodology.												

Subject Name- Project

Subject code: DME-657

Sr No.	CO Description	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Demonstrate a sound technical knowledge of their selected project topic.	2	3	1	3	2	1	1	1	3		1	1
CO2	Undertake problem identification, formulation and solution.	3	3	1	3	1	1	2	1	2		1	1
CO3	Design engineering solutions to complex problems utilising a systems approach.	3	2	2	3		1	2	2	3		2	1
CO4	Conduct an engineering project	1	2	3		1	2	3	1	3	2	2	
CO5	Communicate with engineers and the community at large in written an oral forms.	3	1		3	3		3	2	2		3	3

CO6	Demonstrate the knowledge, skills and attitudes of a professional engineer.	3	3	3	3	2	3	2		3	1		2
CO7	Demonstrate a sound technical knowledge of their selected project topic.	2	3	1	3	3	1	1		3		3	1

PROGRAMME EDUCATIONAL OUTCOMES (PEOs) FOR DIPLOMA IN CIVIL ENGINEERING

The Diploma programme aims to :

1. Develop competent CiVil Engineer with professional skills, knowledge, abilities & attitude for wage employment and/or to become entrepreneur.
2. Provide opportunities and develop competence to work as a leader, manager or team member in multidisciplinary civil engineering works and projects.
3. Develop effective communication skills - Verbal, Written and Graphical, to justify technical solutions for diverse targets associated with civil engineering works.
4. Provide opportunities and develop students in terms of social, economic and environment sensitive as responsible professionals.
5. Developed understanding towards use of different codes - local, national and international, for execution of civil engineering works.
6. Encourage and provide necessary knowledge, skills and opportunities for higher education and exploring different learning strategies for life-long learning.
7. Provide opportunities and develop responsible professionals in terms of ethics and value systems.

PROGRAMME SPECIFIC OUTCOMES FOR DIPLOMA IN CIVIL ENGINEERING

1. Plan, analyze, design and prepare cost estimates for all kinds of Civil Engineering Projects.
2. Execute Civil Engineering Construction and maintenance work using relevant materials and equipment.

PROGRAMME OUTCOMES (POs) FOR DIPLOMA CIVIL ENGINEERING

After successful completion of the Diploma programme, students shall be able to:

1. Demonstrate the application of fundamental knowledge of mathematics, science, and civil engineering to solve simple problems related to civil engineering works.
2. Plan, design, construct and maintain civil engineering structures and buildings.
3. Supervise and manage civil engineering project related activities /practices/ resources effectively.
4. Collect samples, conduct experiments / tests and report results pertaining to civil engineering for execution of quality work.
5. Understand the importance of ethical and professional responsibility and practices as civil engineer.
6. Ensure optimum use of resources in the context of environmental sensitivity, sustainable development and occupational safety.
7. Exhibit effective team work and function as leader & members in multidisciplinary civil engineering projects
8. Demonstrate necessary knowledge, skills and attitudes required to become an entrepreneur in civil engineering related business.
9. Appreciate and apply modern techniques, materials and tools for civil engineering construction works.
10. Employ productivity software /tools to resolve technical problems of project and site.
11. Apply standard code of practices, by-laws, regulations, norms etc for planning and designing of buildings and projects.

COURSE OUTCOMES OF DIPLOMA IN CIVIL ENGINEERING

Note- 3 Strong Contribution, 2 Average Contribution, 1 Low Contribution

FIRST SEMESTER

SUBJECT: Applied Mathematics-I(A)

SUBJECT CODE: DMA-101

Course Outcomes:

1. Arithmetic Progression is a sequence of numbers such that the difference between the consecutive terms is a constant. Looking at this definition one can say that A.P can be applied in real life by analyzing a certain pattern that we see in our daily life. For example, when you are waiting for a bus, assuming that the traffic is moving with a constant speed we can predict when the next bus will come.

Geometric Progression happens whenever each agent of a system acts independently and is fixed. An example of it is- A population growth in which each people decide not to have another kid based on current population then population growth each year is geometric.

Use of Matrix and Determinants:

In IT sector to keep a close account on statistics, manage databases and carry out search engine query etc.

In Geological sector it is used to carry out readings of seismic waves and to have a study on the graph made by it.

2. Trigonometry is basically calculations with triangles and it 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.

3. The concept of Complex Number is used in the field of Computer Science. It is used in coding and programming

4. Coordinate Geometry has application in the field of construction. The sketch of a

building is pure geometry. It is also used for finding the distance between places and in geography also it has many applications. In Astrophysics to find the distance between planets.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO-1	3	2	1	2	1	2		1	2	1	1
CO-2	3	2	1	2	1	2		1	2	1	1
CO-3	3	2	1	2	1	2		1	2	1	1
CO-4	3	3	3	3	2	3	1	3	3	3	3

SUBJECT: Applied Physics (A)

SUBJECT CODE: DPH-101

Course Outcomes:

1. Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure
2. In this student learn investigate the effect of gravity and friction on the motion of machines (mechanical) instrument etc.
3. Students learn to introduce and explain fundamental of fluids mechanics which is used in the application of aerodynamics, hydraulics, marine, dynamic etc.
4. Students learn energy transfer to one gear to another gear in machine and instrument etc.
5. Students learn to analyses some real problem and to formulate the condition of theory of elasticity and application.
6. The student learns to formulate the 1^{st} law of thermodynamics for a close system and arrangement the change in energy in the closed system via heat and work transfer.
7. Distinguish heat transfer by conduction, convection and radiation and calculate the amount of heat energy transfer.
8. Calculate the change in moving boundary work, electrical work shop in close system.
9. Student learns about different thermal process.

CO-PO MAPPING											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO-1	1	3	1	3		1	2	2			
CO-2	1	1		2	1		2		2		
CO-3	2	3	2		1		3				3
CO-4	1					3		3		3	
CO-5	1	2	1	1	2		1		3		3
CO-6	1					2					
CO-7	3		2					1			
CO-8	3			2	3	2					
CO-9	1	1	3						3		

SUBJECT NAME: Applied Chemistry (A)

SUBJECT CODE: DCH-101

Course Outcomes:

1. Basic concept of atomic structure, Matter wave concept determination of quantum numbers, periodicity of elements in periodic table
2. Idea of various types of chemical bonding, VSEPR theory, Valence bond theory and Molecular orbital theory.
3. Concept of acid base theory, pH scale, buffer solution, indicators, common ion effect, electrode potential, Galvanic cell and electrolytic cell, applications of electrochemical series, corrosion and its prevention
4. Rate of reaction, rate constant, molecularity and order of reaction; Understanding of catalyst and their use in various types of reactions; different types of solid and band theory of solids; types of crystal and imperfection of crystal.
5. Understanding of soft and hard water; types of hardness present in water; analysis of water hardness and their softening by using Soda-Lime, Zeolite and Ion exchange method; disadvantage of hard water in different industry; disinfection of water: Municipality waste water treatment.

CO-PO MAPPING											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO1	2			1							
CO2	3										
CO3	3	2		2		2			1		
CO4	3			1							
CO5	3	2		3		2			1		

SUBJECT: Building Materials A

SUBJECT CODE: DCE-101

Course outcomes:

After successful completion of this course students will be able to

1. Examine the properties of common construction materials and their behaviours under different environments, short or long-term.
2. Appraise appropriateness and sustainability of materials for construction projects.
3. Understand the Types, Grades, composition, Ingredients and Manufacturing of Important Building Materials Such as Bricks, Lime and Cement.
4. Name the constituents of Portland cement concrete and proportion concrete mix designs.
5. Understand the use of non-conventional Civil Engineering materials

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	1			2				3		
CO2		2	3			1				3	3
CO3	2		2	3					3		1
CO4		3	1						2		3
CO5			3				2	1			2

SUBJECT: ENGINEERING DRAWING

SUBJECT CODE: DED-101

Course Outcomes:

1. Students' ability to perform basic sketching techniques and construction drawing will be improved.
2. Students will become familiar with practice and standards in technical drawing.
3. Students will develop good communication skills and team work.
4. Students' ability in legible writing letters and numbers will be improved.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2	3				2			2	2	
CO2	2	3		1	2				2	3	
CO3	3				3		3			1	
CO4	2	3			2				1	2	

SUBJECT: Applied Mechanics-A

SUBJECT CODE: (DAM-101)

Course outcomes:

After successful completion of this course students will be able to

1. Solve simple problem of work and energy..
2. understand the importance and application of various laws of mechanics
3. Determine the equilibrium of a particle in space using principle of laws of mechanics
4. Compute the equilibrium of rigid bodies in two dimensions and in three dimensions.
5. Calculate the principal moment of inertia of plane areas.
6. Solve the problems using equation of motions and analyze impact of elastic bodies on collision.
7. Solve the problems of simple system with sliding friction and calculate linear and angular acceleration of moving body in general plane motion.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2	3	1	3	2		1	1	1		1
CO2	3	3	1		1	1		1	2		1
CO3	3		2	3		1	2		1		2
CO4	1	2	3			2	3	1		2	2
CO5	3	1		3	3		3		1		3
CO6		3	3		2	3	2		3	1	
CO7	2	3	1		3	1	1			1	2

SUBJECT NAME: **Applied Chemistry Lab**

SUBJECT CODE: DCH-151

Course Outcomes:

1. Analysis of acid and basic radical of inorganic mixture
2. Determination of chloride content by Mohr's method in supplied water
3. Testing of total hardness of water sample by EDTA titration method in terms of $CaCO_3$
4. Analysis of temporary hardness in water sample through O'Hener's method.
5. Dissolve oxygen analysis in water sample
6. Analysis of strength of HCl solution through NaOH solution by using pH meter

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2	2		2		2			2		
CO2	3	2		2		1			2		
CO3	3	3		2		2			2		
CO4	3	3		2		2			2		
CO5	3	3		2		2			2		
CO6	3	3		2		2			2		

SUBJECT: Basic Computer Aided Design Lab

SUBJECT CODE: DCAD-151

Course Outcomes:

1. Students will develop good communication skills and team work.
2. Students will become familiar with office practice and standards.
3. Students will become familiar with Auto Cad's two dimensional drawings.
4. Student's ability to convert sketches into engineered drawings will increase.
5. Students will be able to draw orthographic projections and sections.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	2	3	3	2	1	1	1	1		1
CO2	2	1	3	3	1	1	2	1	2		1
CO3	1	3	1	3	2	1	2	2	1		2
CO4	3	3	2	3	1	2	3	1	3	2	2
CO5	1	2	3	3	3	1	3	2	1		3

SUBJECT: Workshop practice

SUBJECT CODE: DWS-151

Course outcomes:

1- To acquire skills in basic engineering practice.

2- To identify the hand tools and instruments.

3- To acquire measuring skills.

4- To acquire practical skills in the trades.

5- To provides the knowledge of job materials in various shops.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2			2	2						
CO2					3				2		
CO3	3			2			3	2			
CO4					2		2	2		2	
CO5				3	2		2	3	2		

SUBJECT: Computer Application Lab

SUBJECT CODE: DCS-151

Course outcomes:

1. Bridge the fundamental concepts of computers with the present level of knowledge of the students.
2. Fundamental concepts of computers and its memory .
3. Fundamental concepts of programming Language C .
4. To prepare students in understanding ICT basics and to make aware of Office automation using MS- Office.
5. To Train students with basic concepts of programming using C.
6. To prepare students in understanding ICT basics and to make aware of Office automation using MS- Office. To Train students with basic concepts of programming using C

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	2	2	1						1	
CO2	1	1		3					2		
CO3	1			1	2					3	
CO4	1	2	3								1
CO5	1		2	1	3					2	1
CO6	1	1			2					3	

SECOND SEMESTER

SUBJECT: Applied Mathematics I (B)

SUBJECT CODE: DMA-201

Course outcomes:

1. Here Students are getting the knowledge of Graphs, Continuity and Differentiation by which they will be able to find areas of any surface. Fundamental concepts of computers and its memory.
2. By getting full knowledge of tangent and normal student will be able to use it in daily lives and further studies in Architectural Engineering, Civil Engineering etc. To prepare students in understanding ICT basics and to make aware of Office automation using MS- Office.
3. Definite and Indefinite integral knowledge makes students wide in solving problems related to big summations and areas related problems. Regarding applications student will be able to solve problems like finding the area bounded by simple curves, Volume of Solids of Revolution, mean value, mean square value, root mean square value of functions will be easily solved.
4. Applications of Integration will lead students to get a good knowledge of finding areas, volume etc.
5. Some different rules like Newton- Cote's Quadrature formula, sTrapezoidal Rule, Simpson's $1/3^{rd}$ rule and $3/8^{th}$ Rule.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	3	3	3	2	1	_	3	2	3	2
CO2	3	3	3	2	2	1	_	3	3	3	2
CO3	3	3	3	3	2	1	_	3	2	3	2
CO4	3	3	3	2	3	1	_	3	2	3	2
CO5	3	3	3	3	2	1	_	3	2	1	2

SUBJECT: Applied Physics (B)

SUBJECT CODE: DPH-201

Course Outcomes:

1. Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure
2. Student learn to analysis to effect of building acoustic condition
3. Student learn about application of ultrasound in various field like SONAR, medical and research work and sound signal etc.
4. The student learn to introduce and overview of optical fiber and process of transmission of signal and application of various field.
5. Student learns to investigate broken telegraph wire with the help of post office box.
6. Student learn to simplify the complicated circuit by using Kirchhoff's law
7. Student will be able to distinguish among various student in the basis of magnetic properties like Dia, Para and ferromagnetic and build the temporary and permanent magnet.
8. Student learns about LASER and various applications in various fields like medical etc.
9. Student learns about basic electronics which promote to learn the characteristics of transistor (amplifier).
10. X-ray and various properties in various field like medical engineering and research center etc.

CO-PO MAPPING											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO1	1										
CO2	2	1							2		
CO3	3	2		3		3			2		
CO4		3									
CO5										3	
CO6											
CO7		3		3					3		
CO8									2		
CO9											
CO10						2			2		

SUBJECT: Applied Chemistry (B)

SUBJECT CODE: DCH-201

Course Outcomes:

1. Classification and properties of good fuels, calorific value and its determination, refining of petroleum, Benzol, power alcohol, Knocking of engine and anti-knocking agents used to reduce knocking, octane and cetane number, Bergius and Fischer Tropsch's method for hydrogenation of coal, Preparation and uses of Coal gas , oil gas, water gas biogas, LPG and CNG

2. Concept of Colloidal state of matters, preparation of colloids by physical and chemical method, protective colloids, properties of colloids: Brownian movement, Tyndal effect, Electrophoresis and Coagulation. Preparation of emulsion and its application;

   Lubricants and their types; Function, mechanism and its application in different industry; additive compounds in lubricant

3. IUPAC nomenclature of organic compounds, preparation and uses of ethane, ethane, ethyne, benzene and toluene.

4. Concept of electrophiles and nucleophiles, reaction intermediates: free radical, carbocation, carbanion mechanism of electrophilic and nucleophilic substitution reaction, addition, and elimination reactions

5. Polymers, synthesis properties and uses of addition and condensation polymers, biopolymers, manufacturing of soap, detergents, Preparation and uses of explosives: TNT, RDX, Dynamite,

   Synthesis and use of paint and Varnish.

CO-PO MAPPING											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO1	3										
CO2	2	3		3		2			2		
CO3	3			1							
CO4	3										
CO5	3	3		3		2			3		

SUBJECT: Building Materials B

SUBJECT CODE: DCE-201

Course outcomes:

1. The course provides basic knowledge of the properties of essential materials, especially Timber, Steel, concrete and wood, heat insulation materials, Glass, Plastics and composites.
2. The candidate will learn the basic theory about important building materials.
3. Show the relationship between the choice of materials, physical material properties and environmental concerns.
4. 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, and carpeting.
5. To identify the methods for preservation of timber and metals.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	1						2			
CO2	1	3			2						
CO3	1		2			3					
CO4			2	3	1						
CO5			3	2		1					

SUBJECT: Applied Mechanics-B

SUBJECT CODE: DAM-201

Course Outcomes:

1. Understanding different units and its use in other subject.
2. Application of various laws in practical aspect..
3. Application of various theory.
4. Practical behaviour of friction.
5. Analyse couple and moment in different aspect and Its use.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO1	2	3	1	3	2	1	1	1	1		
CO2	3	3	1	3	1	1	2	1	2		
CO3	3	2	2	3		1	2	2	1		
CO4	1	2	3		1	2	3	1	3	2	
CO5	3	1		3	3		3	2	1		

SUBJECT: Professional Communication

SUBJECT CODE: DPC-201

Course outcomes:

1. Introduction of the concept of communication, types skills,modern tools, etc..
2. 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.
3. The CO of this unit is to control sentence-level error (grammar, punctuation, and spelling)
4. Its outcome is to employ techniques of active reading, critical reading, and informal reading response for inquiry, learning, and thinking.
5. 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.
6. The conclusion of this subject is to increase the students' 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.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2	3	1		1					1	
CO2	1	1			2					1	
CO3	1			3						1	2
CO4			1	2	3						
CO5	1	1								3	2
CO6								2	3	1	

SUBJECT: Applied Physics Lab

SUBJECT CODE: DPH-251

Course Outcomes:

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

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	1	1	1	2	3	3	1	2	3		
CO2	2	2	2	2	3		1	2	2		2
CO3	3	2	3	3	3	2	1	1	1		2
CO4	3	2	2	3	3	3	3	3	2		

SUBJECT: Building Materials Lab

SUBJECT CODE: DCE 251

Course outcomes:

1. Able to design and test the materials either in the laboratory or in the field before their actual use at the site.

2. Able to Impart the knowledge about the characteristics, sources and defects in various materials used for construction purposes.

3. Able to attain the knowledge of different components of building, their classification, materials and methods of construction and causes of their failures.

4. To examine and identify different types of stones and aggregates i.e. the Visual identification of these materials specimen present in the Lab.

5. Identification of timbers i.e. the visual identification of specimen of different Exogenous Trees.

6. To determine the Strength of various Engineering Materials and Conduct the Field Test of Cement, Lime and Bricks.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2			3					2	1	
CO2	3		3	2		1					
CO3	3			1	2				3		
CO4			2	3				3			1
CO5	2		1	3		1	3				
CO6	1			3		2			3		3

SUBJECT: Applied Mechanics LAB

SUBJECT CODE: DAM-251

Course Outcomes:

1. Learn basics of machine mechanics.
2. Students learn how to operate different lifting machines.
3. Students learn how to calculate mechanical advantage of different lifting machines.
4. Learn basics of principle of moments, resolution of forces and coefficient friction.
5. Students learn about efficiency of different machines.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	1		1	3	1	1			1	1	
CO2	2		1			1					
CO3	1	1	1						3		
CO4	1	1	1	1					3		
CO5	1	1	1						1		

SUBJECT: Professional Communication

SUBJECT CODE: DPC-251

Course outcomes:

1. Introduction of International Phonetic Alphabet and Pronunciation practice.
2. 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.
3. 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
4. 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
5. 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
6. 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

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	2	3							1	
CO2	1	2		3							
CO3											
CO4	2	1		3	3					1	
CO5	3			1	2					3	1
CO6		2			2				1	3	1

THIRD SEMESTER

SUBJECT: Elementary Electrical and Mechanical Engineering

SUBJECT CODE: DCE-301

Course outcomes:

After successful completion of this course students will be able to

1. Basic concepts and working of different electrical lamps, wiring materials and accessories.
2. Study basic principles of operation, construction and specification of electrical machines
3. Identify the hand tools and instruments.
4. Knowledge of various machining operations and machine tools.
5. To understand the working of different I.C engines and different types of gears . Jack plane and material handling equipments

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	1	1	1	1	1	1	1	1	2		2
CO2	1	1	1	1	1	1	1	1	2	1	2
CO3	1	1		1		1	1	1		1	1
CO4		1	1		1		1		1	1	1
CO5	1		1		1		1	1		1	1

SUBJECT: Strength of Materials

SUBJECT CODE: DCE-302

Course outcomes:

After successful completion of this course, students will be able to

1. Analyze indeterminate structures like fixed and continuous beams of simplestructures.
2. Analyze shear force and bending moments for different types of beams.
3. Study of different types of stresses and their variation along the length of beam.
4. Analyze columns and struts of simplestructures and concept of direct & bending stresses of simplestructures.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	3		3						2	1
CO2	3	2	2							2	
CO3	2	3	2							2	
CO4	3	2	2							3	

SUBJECT: Hydraulics

SUBJECT CODE: DCE-303

Course outcomes:

After successful completion of this course students will be able to

1) Perform various tests regarding behavior of fluid/liquid.
2) Interpret the problems related to fluid/liquid and apply for solving fluidmechanics problem.
3) Compute discharge and loss of head through pipes, open channels, notches andother hydraulicstructures.
4) To determine different types of pressure acting on a fluid.

COPO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	3		3		1							
CO2	2	3		2		2							
CO3	3	3	3			2							
CO4	2	2		3		1							

SUBJECT: Public Health Engineering I

SUBJECT CODE: DCE-304

Course outcomes:

After successful completion of this course students will be able to

1. Understand the terms involved in public water supply, domestic and industrial sewage.
2. Know different types of sources of water for public water supply
3. Understand the methods for estimating quantity of water supply required for city or town.
4. Suggest the treatment required by knowing the quality of water.
5. Understand the hydraulic design of Units in treatment plant.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2	3		1							
CO2	2	3			2			2			
CO3	2	3			2			2			2
CO4	2	3		1	1	2					
CO5	2	3				1	1				

SUBJECT:Building Construction &Maintainance Engineering-I

SUBJECT CODE: DCE-305

Course outcomes:

After successful completion of this course students will be able to

1. Know various technical terms related to different components of building structure.
2. Understand various construction processes of different building components with use of equipments.
3. Understand the process of setting out of building.
4. Know various materials required for execution of various construction processes.
5. Suggest rectifications for various defects in Building works.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	2		1		2					
CO2									3	2	
CO3	1	3			2						2
CO4				3					1		2
CO5			2	3		1					

SUBJECT: Concrete Technology-I

SUBJECT CODE: DCE-306

Course Outcomes:

After successful completion of this course, students will be able to

1. Identify the functional role of ingredients of concrete and apply this to mix design philosophy.
2. Acquire and apply fundamental knowledge in the fresh and hardened properties of concrete.
3. Develop an awareness of the utilization of waste materials as novel innovative for use in concrete.
4. Evaluate physical properties of cement, sand and aggregate.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1				3	1		2		3		
CO2	1		3	3		2					2
CO3	2		2	2		1	3		2		
CO4	2		3	2					1	1	

SUBJECT: Strength of Material Lab

SUBJECT CODE: DCE-352

Course outcomes:

1. Demonstrate the basic principles in the area of strength and mechanics.
2. Evaluate the allowable loads and associated allowable stresses before mechanical failure.
3. Perform tests to measure the properties of the materials such as impact strength, tensile strength, compressive strength, hardness, ductility etc
4. Analyse the performance of deformable solids in various materials under the action of different kinds of loads.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2	3		1							3
CO2	2	3	1					2		2	3
CO3	2	3				1		2			3
CO4	2	3		1	1	2			2		3

SUBJECT: Hydraulics Lab

SUBJECT: DCE -353

Course Outcomes:

After successful completion of this course, the students will be able to

1. Measure theoretical discharge in pipes, Venturi meter, orifice meter and notches.
2. Demonstrate and conduct experiment to find characteristic curves of various pumps.
3. Demonstrate and conduct experiment to find characteristic curves of various turbines.
4. Demonstrate the different losses in pipe

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	1	3	2	3					2		
CO2	1	3	2	3					2		
CO3	1	3	2	3					2		
CO4	1	3	2	3					2		

SUBJECT: Concrete Technology & Building Construction and Maintenance Lab

SUBJECT CODE: DCE-356

Course outcomes:

After successful completion of this course students will be able to

1. To know about the different tests of cement and aggregate.
2. To know about the workability and strength of concrete.
3. To know the different type of concrete and mix design.
4. To know the basic properties of ingredients of concrete.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1				3		2		2	2		3
CO2				3				2		2	3
CO3		2		3		2		2	2		3
CO4		2		3	1			2	1		2

FOURTH SEMESTER

SUBJECT: Soil Mechanics &Foundation Engineering

SUBJECT CODE: DCE-401

Course Outcomes:

After successful completion of this course, students will be able to

1) Calculate standard soil properties and classify asoil.
2) Carry-out laboratory tests for measuring engineering property parameters of a soil sample.
3) Specify the essential features and requirements of siteinvestigation.
4) Calculate stresses in soil under various loadingconditions.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2	3		3				3		3	
CO2	2	3		3				3		3	
CO3	2	3		2				3		3	
CO4	2	3		2				3		3	

SUBJECT: **Civil Engineering Drawing-I**

SUBJECT CODE: **DCE-402**

Course Outcomes:

After successful completion of this course students will be able to

1. Interpret conventional sign, symbols and working drawings of various civil engineering structures.
2. Prepare a detailed drawing for residential and publicbuildings.
3. Explain Building bye laws and Principles of Planning for residential and public buildings
4. Use software to prepare detailed drawing of residential and publicbuildings.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1		3						2		2	1
CO2		3					2				3
CO3		3					2	2			3
CO4		3					2	1		3	

SUBJECT: Surveying-I

SUBJECT CODE: DCE-403

Course Outcomes:

After successful completion of this course students will beable to

1. Handle various survey instruments for a particular surveywork.
2. Carry out various civil engineering surveyworks.
3. Collect and analyse survey data for preparing drawings andmaps.
4. Do different methods and their procedure for levelling.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	3	3	2		1	3	2			
CO2	3	2	2	1		1	2	2			
CO3	2	2	1			1	1				
CO4	3	2	3				2				

SUBJECT: Public Health Engineering-II

SUBJECT CODE: (DCE-404)

Course Outcome:

After successful completion of this course students will be able to

1. To know the basic knowledge about wastewater.
2. To know different techniques for treatment of waste water.
3. To know the sanitation system and disposal of the sewage.
4. To know about drains and sewer sections.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	1		2	3	2	3		2	2	2	2
CO2	2			3	2	3	2	2	2	2	
CO3	1		2	3	2	3	2	2	2	2	2
CO4	2		2	3	2	3		2	2	2	

SUBJECT: Building Construction & Maintainance Engineering-II

SUBJECT CODE: (DCE-405)

Course outcomes:

After successful completion of this course students will be able to

1. Students are able to understand the property, use, advantage and disadvantage of different material used in construction.
2. Identify the components of building and differentiate various types of building materials depending on its function.
3. Students are able to understand construction procedure of different components.
4. Students will Learn Details and Structure of all Parts and Components of the Building.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3			2				1			
CO2		2	2		3	1					
CO3	1	2	3			2		1			
CO4	3	3							3	1	2

SUBJECT: Concrete Technology-II

SUBJECT CODE: DCE-406

Course outcomes:

After successful completion of this course students will be able to

1. Know the Basic properties of ingredients of concrete.
2. know about the workability and strength of Concrete.
3. know the different type of concrete and mix design.
4. know about the concreting techniques

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1		3		2		2			1		2
CO2	2	3			1				2		2
CO3	2	3	2						1		2
CO4		3	2	1	1	2					2

SUBJECT: Soil Mechanics Lab

SUBJECT CODE: DCE-451

Course outcomes:

1. Determination of moisture content and specific gravity of soil particles by different method.
2. Determination of soil particles size and its liquid limit and plastic limit.
3. Analysis of Shear strength of sand by Shear test.
4. Experiment related to civil engineering materials using different tools and their application

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2			3					1	2	
CO2	1			3					3	2	
CO3	2			2					1	3	
CO4	2			3					1	3	

SUBJECT: Surveying Lab-1

SUBJECT CODE: DCE-453

Course outcomes:

1. Measuring angles between the lines meeting at a point by prismatic compass.
2. To find the difference of level between two distant points by taking staff readings on different stations from the single setting.
3. To find the difference of level between two points by taking at least four change points.
4. Taking offsets and setting out right angles with cross staff and Indian optical square.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2			3					1	2	
CO2	1			3					3	2	
CO3	2			2					1	3	
CO4	2			3					1	3	

SUBJECT: Public Health Engineering Lab

SUBJECT CODE: DCE-454

Course outcomes:

At the end of the course student will able

1. To impart students with strong knowledge of water drinking standards for public health.
2. Analyse various physio-chemical and biological parameters of water in case of quality requirements.
3. At the end of the course student will be able to assess complete water quality assessment for EIA &domestic supplies.
4. Student will suggest various types of treatment methods required to purify raw water with different contaminants.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1		1	1	3	3	3	1	3	1	1	3
CO2		1	1	3	2	3	1	3	1	1	3
CO3		1	1	3	3	3	1	2	1	1	3
CO4		1	1	3	3	3	1	3	2	1	3

FIFTH SEMESTER

SUBJECT: Design of Reinforced Concrete structure-I

SUBJECT CODE: DCE-501

Course Outcomes:

After successful completion of this course students will be able to

1) Explain the basic concepts of structural design Methods of RCC to the practical problem.
2) Know the concepts of Pre-stressed concrete.
3) Use the Knowledge in structural planning and design of various component of buildings.
4) Explain and design of Slabs & lintel.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1		3	2					3	2		3
CO2			2					3	3		3
CO3		3	2					3	3		3
CO4		3	2					3	2		3

SUBJECT: Transportation Engineering-I

SUBJECT CODE: DCE-502

Course Outcomes:

After successful completion of this course students will be able to

1. Exhibit the knowledge of planning ,design and the fundamental properties of highway materials
2. Acquire the knowledge of geometric design.
3. Understand and use the concept of different methods in design, construction, in section and maintenance.
4. Understand the different sub –structures and super-structures of a bridge and its construction.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	3	2	3					2		
CO2	3	2	2	3					2		
CO3	2	3	2	1					1		
CO4	3	2	2	2					2		

SUBJECT: Environmental Pollution & Control

SUBJECT CODE: DCE-503

Course outcomes:

After successful completion of this course students will be able

1) To impart students with strong knowledge base through theory courses and sessional that makes them suitable for industries, academics, research and consultancies.
2) To develop students analytical, computational and research skills through assignments.
3) To train the students on developing practical, efficient and cost effective solutions on problems and challenges on environmental sciences and engineering.
4) To inculcate among students sensitivity towards social and corporate responsibilities

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	1	3	1	3		3	1		1	1	3
CO2	1	2	1	3		3	1		1	1	3
CO3	1	2	1	3		3	1		1	1	2
CO4	3	3	1	3		3	1		2	1	3

SUBJECT :Irrigation Engineering

SUBJECT CODE: DCE-504

Course outcomes:

After successful completion of this course students will be able to

1. Apply the knowledge of irrigation engineering to determine crop water requirement.
2. Explain the dams, reservoir and barrage and their utilities.
3. Describe canal regulation work, cross drainage work, problems of water logging and their prevention.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2		2	1		2		2			3
CO2	2	2	2		2			2			1
CO3	2	3	2		2	2		2			3

SUBJECT: Surveying- II

SUBJECT CODE: DCE-505

Course Outcome:

After successful completion of this course students will be able to

1. Handle various survey instruments for a particular survey work.
2. Carry out various civil engineering survey works.
3. Collect and analyze survey data for preparing drawings and maps.
4. Apply checks for errors elimination.
5. Perform setting of horizontal curves on field.
6. Carry-out survey work using theodolite and total station.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	2	2	2	2	1	2	2			
CO2	3	3	2	1	2	1	2	1	1		
CO3	2	3	2	1	2	2	2	1	2		
CO4	2	1	2	3	2	2	1				
CO5	3	3	3	2	2	1	3	1			
CO6	3	3	2	3	2	3	2	2	2		

SUBJECT :Construction Management &Accounts-I

SUBJECT CODE: DCE-506

Course Outcome:

After successful completion of this course students will be able to

1. Ability to take responsibilities as construction manager.
2. Application of different acts for construction labour & organizing ability.
3. Knowledge of work measurement application in construction industry.
4. Study the concepts of accident and safety in construction.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1		3	2				1	3	2		3
CO2		2	3				1	3	2		1
CO3		2	2				1	3	2		2
CO4		3	1				2	2	1		3

SUBJECT: Surveying-II Lab

SUBJECT CODE: DCE-555

Course Outcome:

1. Know about the working of plane table.
2. Prepare the contour map
3. Find the difference of level between the points.
4. Record and observing necessary observation with the survey instruments.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1		3	3	3				2	3		
CO2		3	3	2				2	3		
CO3		3	3	3				2	3		
CO4		3	3	3				2	3		

SUBJECT: Field Exposure

SUBJECT CODE: DCE-557

Course Outcomes:

After successful completion of this course, the students will be able to

1. Handle and execute the civil engineering projects in the field.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1		3	3	2	2	1		1		1	

SIXTH SEMESTER

SUBJECT: Design of Reinforced Concrete structure-II

SUBJECT CODE: DCE-601

Course Outcomes:

Upon completion of the course, students will be able to:

1. Have acquired in-depth knowledge and critical understanding of the theory and principles of design and solution of Reinforced Concrete structures, since they could use new technologies and information systems in the design of civil Engineering structures with Reinforced concrete.
2. Be able to perceive, design and analyze Reinforced Concrete structures (Beams, Columns, Frames)
3. To have the ability to compose, solve and evaluate the internal forces (N, Q, M), the deformations, the stresses and reinforcements in various structures made of Reinforced Concrete.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1		3		2	3			2			
CO2		3				2		3			2
CO3	2	3								2	3

SUBJECT: Transportation Engineering-II

SUBJECT CODE: DCE-602

Course outcomes:

After successful completion of this course students will be able to

1. Explain the function of various elements of railways.
2. Plan and design various elements of railway.
3. Apply the various principles traffic control in airport
4. Explain the function of various elements of tunnel and their maintenance

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	3	2	3					2		
CO2	3	2	2	3					2		
CO3	2	3	2	1					1		
CO4	3	2	2	2					2		

SUBJECT: Estimating Costing and valuation

SUBJECT CODE: DCE-603

Course Outcome:

After successful completion of this course students will be able

1. To know the basic measurements method, rate analysis, quantity of items and valuation of properties.
2. To know about specifications and rate analysis.
3. To know the estimation and valuation.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	3	3	2				3	3	1	2	2
CO2	3	3	3					2	2	1	1
CO3	3	2	2					1	2	1	1

SUBJECT: Design of Steel and Masonry Structure

SUBJECT CODE: DCE-604

Course outcomes:

After successful completion of this course students will be able

1) Understand the analysis of forces acting on different members and select proper material and sections from steel table.

2) Understand the design of tension members, compression members, beams, purlins, column bases and steel roof trusses and understand design values for members using IS 800-2007.

3) Understand and interpret the fabrication drawings and structural drawings.

4) Understand the drawings of designed sections of steel roof truss and its connections.

5) Understand the use of IS 875-1987 part I to IV, provisions for dead loads, live loads and wind loads and seismic loads (Earthquake loads)

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2	3									
CO2	2	3						2			
CO3	2	3						2			2
CO4	2	3		1	1	2					
CO5	2	3									

SUBJECT: Earthquake Engineering

SUBJECT CODE: DCE-605

Course outcomes:

1. Basics knowledge of dynamics & method of dynamics analysis.
2. Blast & fire resistant design of structure.
3. Acquire knowledge of structural dynamics & earthquake engg& be able to discriminate, evaluate, analyse & integrate existing & new knowledge.
4. Retrofitting, rehabilitation & strengthening of structure.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	2	3			1				3		
CO2	1				2						3
CO3	2							1		3	3
CO4	2			2		2					1

SUBJECT: Construction Management &Accounts-II

SUBJECT CODE: DCE-606

Course outcomes:

After successful completion of this course students will be able to

1. To be able to gain the knowledge of construction administration issues and quality related problems in construction projects.
2. To be able to have an idea of hierarchy, work responsibility and work progress.
3. To be able to understand risks and uncertainty related issues in constructions.
4. To be able to understand the concept of entrepreneurship development in civil engineering field.
5. To be able to understand the responsibilities of engineer in civil engineering projects.

CO-PO MAPPING											
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO1			3				2	1		3	
CO2			1				2	2		1	
CO3			3				3	3		1	
CO4			3				2	3		2	
CO5			2				1	2		3	

SUBJECT: Reinforced Cement Concrete And Highway Lab

SUBJECT CODE: DCE-651

Course Outcomes:

After successful completion of this course, the students should be able to

1. Assess the quality of the concrete through laboratory tests.
2. Design the mix proportion for the required concrete strength
3. Assess the quality of bitumen through laboratory tests.
4. Assess the properties of sub grade soil through laboratory tests.

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	1	3	2	3	1				2	2	
CO2	1	3	1	3	1	2			2	2	
CO3	1	3	2	3	1				2	2	
CO4	1	3	2	3	1				2	2	

SUBJECT: Project

SUBJECT CODE: DCE -657

Course outcomes:

After undergoing the project work, students will be able to:

1. Develop understanding regarding the nature of fieldwork in which students are going to play their role after completing the courses of study.
2. Develop understanding of subject based knowledge given in the classroom in the context of its application at work places
3. Develop abilities like interpersonal skills, communication skills, positive attitudes and values.
4. Develop first-hand experience and confidence

CO-PO MAPPING											
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	1	3	3	2	3	3	2	2	1	2	3
CO2		3	3		2				3		
CO3		3	3		3	1		3			
CO4		3	3		2	2					2

PROGRAMME EDUCATIONAL OUTCOMES (PEOs) FOR DIPLOMA IN CIVIL (Construction Management And Safety)ENGINEERING

The Diploma programme aims to :

1. Develop competent Civil Engineer with professional skills, knowledge, abilities & attitude for wage employment and/or to become entrepreneur.
2. Provide opportunities and develop competence to work as a leader, manager or team member in multidisciplinary civil engineering works and projects.
3. Develop effective communication skills - Verbal, Written and Graphical, to justify technical solutions for diverse targets associated with civil engineering works.
4. Provide opportunities and develop students in terms of social, economic and environment sensitive as responsible professionals.
5. Developed understanding towards use of different codes - local, national and international, for execution of civil engineering works.
6. Encourage and provide necessary knowledge, skills and opportunities for higher education and exploring different learning strategies for life-long learning.
7. Provide opportunities and develop responsible professionals in terms of ethics and value systems.

PROGRAMME SPECIFIC OUTCOMES(PSOs) FOR DIPLOMA IN CIVIL (Construction Management And Safety)ENGINEERING

1. Plan, analyze, design, maintenance and prepare cost estimates for all kinds of Civil Engineering Projects.
2. Apply modern construction techniques, equipment and management tools so as to complete the project within specified time and funds.

PROGRAMME OUTCOMES (POs) FOR DIPLOMA IN CIVIL (Construction Management & Safety) ENGINEERING

After successful completion of the Diploma programme, students shall be able to:

1. Demonstrate the application of fundamental knowledge of mathematics, science, and civil engineering to solve simple problems related to civil engineering works.
2. Plan, design, construct and maintain civil engineering structures and buildings.
3. Supervise and manage civil engineering project related activities /practices/ resources effectively.
4. Collect samples, conduct experiments / tests and report results pertaining to civil engineering for execution of quality work.
5. Understand the importance of ethical and professional responsibility and practices as civil engineer.
6. Ensure optimum use of resources in the context of environmental sensitivity, sustainable development and occupational safety.
7. Exhibit effective team work and function as leader & members in multidisciplinary civil engineering projects
8. Demonstrate necessary knowledge, skills and attitudes required to become an entrepreneur in civil engineering related business.
9. Appreciate and apply modern techniques, materials and tools for civil engineering construction works.
10. Apply standard code of practices, by-laws, regulations, norms etc for planning and designing of buildings and projects.
11. Select appropriate control methodologies based on the hierarchy of controls.
12. Identify a safety management system for construction in a systematic way to reduce the hazards and managing risks related to the construction work place.
13. Plan and organize contracts for goods and services.

COURSE OUTCOMES OF DIPLOMA IN CIVIL ENGINEERING

Note- 3 Strong Contribution, 2 Average Contribution, 1 Low Contribution

FIRST SEMESTER

SUBJECT: Applied Mathematics-I(A)

SUBJECT CODE: DMA-101

Course outcomes:

1. Arithmetic Progression is a sequence of numbers such that the difference between the consecutive terms is a constant. Looking at this definition one can say that A.P can be applied in real life by analyzing a certain pattern that we see in our daily life. For example, when you are waiting for a bus, assuming that the traffic is moving with a constant speed we can predict when the next bus will come.

Geometric Progression happens whenever each agent of a system acts independently and is fixed. An example of it is- A population growth in which each people decide not to have another kid based on current population then population growth each year is geometric.

Use of Matrix and Determinants:

In IT sector to keep a close account on statistics, manage databases and carry out search engine query etc.

In Geological sector it is used to carry out readings of seismic waves and to have a study on the graph made by it.

2. Trigonometry is basically calculations with triangles and it 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.
3. The concept of Complex Number is used in the field of Computer Science. It is used in coding and programming
4. Coordinate Geometry has application in the field of construction. The sketch of a building is pure geometry. It is also used for finding the distance between places and in geography also it has many applications. In Astrophysics to find the distance between planets..

COPO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	2	1	2	1	2		1	2	1	1		
CO2	3	2	1	2	1	2		1	2	1	1		
CO3	3	2	1	2	1	2		1	2	1	1		
CO4	3	3	3	3	2	3	1	3	3	3	3		

SUBJECT: Applied Physics (A)

SUBJECT CODE: DPH-101

Course Outcomes:

1. Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure
2. In this student learn investigate the effect of gravity and friction on the motion of machines (mechanical) instrument etc.
3. Students learn to introduce and explain fundamental of fluids mechanics which is used in the application of aerodynamics, hydraulics, marine, dynamic etc.
4. Students learn energy transfer to one gear to another gear in machine and instrument etc.
5. Students learn to analyses some real problem and to formulate the condition of theory of elasticity and application.
6. The student learns to formulate the 1^{st} law of thermodynamics for a close system and arrangement the change in energy in the closed system via heat and work transfer.
7. Distinguish heat transfer by conduction, convection and radiation and calculate the amount of heat energy transfer.
8. Calculate the change in moving boundary work, electrical work shop in close system.
9. Student learns about different thermal process.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1	3	1	3		1	2	2					2
CO2	1	1		2	1		2		2				
CO3	2	3	2		1		3				3		1
CO4	1					3		3		3		2	
CO5	1	2	1	1	2		1		3		3		
CO6	1					2							
CO7	3		2					1					
CO8	3			2	3	2							
CO9	1	1	3						3				

SUBJECT NAME: Applied Chemistry (A)

SUBJECT CODE: DCH-101

Course Outcomes:

1. Basic concept of atomic structure, Matter wave concept determination of quantum numbers, periodicity of elements in periodic table
2. Idea of various types of chemical bonding, VSEPR theory, Valence bond theory and Molecular orbital theory.
3. Concept of acid base theory, pH scale, buffer solution, indicators, common ion effect, electrode potential, Galvanic cell and electrolytic cell, applications of electrochemical series, corrosion and its prevention
4. Rate of reaction, rate constant, molecularity and order of reaction; Understanding of catalyst and their use in various types of reactions; different types of solid and band theory of solids; types of crystal and imperfection of crystal.
5. Understanding of soft and hard water; types of hardness present in water; analysis of water hardness and their softening by using Soda-Lime, Zeolite and Ion exchange method; disadvantage of hard water in different industry; disinfection of water: Municipality waste water treatment.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3								1				
CO2	3												
CO3	3	1		3		2			2		2		
CO4	3			1		1							
CO5	3	2		3		3			3		2	1	

SUBJECT: Building Materials A

SUBJECT CODE: DCE-101

Course outcomes:

After successful completion of this course students will be able to

1. Examine the properties of common construction materials and their behaviours under different environments, short or long-term.
2. Appraise appropriateness and sustainability of materials for construction projects.
3. Understand the Types, Grades, composition, Ingredients and Manufacturing of Important Building Materials Such as Bricks, Lime and Cement.
4. Name the constituents of Portland cement concrete and proportion concrete mix designs.
5. Understand the use of non-conventional Civil Engineering materials

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1		2	2		3							3
CO2			3			3	1			2			
CO3	2	2			3	3						1	
CO4	2		2			1		3					
CO5							1			2	3		

SUBJECT: ENGINEERING DRAWING

SUBJECT CODE: DED-101

Course Outcomes:

1. Students' ability to perform basic sketching techniques and construction drawing will be improved.
2. Students will become familiar with practice and standards in technical drawing.
3. Students will develop good communication skills and team work.
4. Students' ability in legible writing letters and numbers will be improved.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	2	3				2			2	2			
CO2	2	3		1	2				2	3			
CO3	3				3		3			1			
CO4	2	3			2				1	2			

SUBJECT: Applied Mechanics-A

SUBJECT CODE: (DAM-101)

Course outcomes:

After successful completion of this course students will be able to

1. Solve simple problem of work and energy..
2. understand the importance and application of various laws of mechanics
3. Determine the equilibrium of a particle in space using principle of laws of mechanics
4. Compute the equilibrium of rigid bodies in two dimensions and in three dimensions.
5. Calculate the principal moment of inertia of plane areas.
6. Solve the problems using equation of motions and analyze impact of elastic bodies on collision.
7. Solve the problems of simple system with sliding friction and calculate linear and angular acceleration of moving body in general plane motion.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	**2**	**2**		**3**	**2**		**1**	**1**	**1**		**1**		**1**
CO2	**1**	**3**	**1**		**1**	**1**		**1**	**2**	**3**	**1**	**2**	
CO3	**3**		**2**	**1**		**1**	**2**		**1**		**2**		**3**
CO4	**1**	**2**	**3**			**2**	**3**	**1**		**2**	**2**		
CO5	**1**	**1**		**3**	**3**		**3**		**2**		**3**		
CO6		3	3		2	2	2		3	1			
CO7	2	3	1		3	1	1			1	2		

SUBJECT : **Applied Chemistry Lab**

SUBJECT CODE: DCH-151

Course Outcomes:

1. Analysis of acid and basic radical of inorganic mixture
2. Determination of chloride content by Mohr's method in supplied water
3. Testing of total hardness of water sample by EDTA titration method in terms of $CaCO_3$
4. Analysis of temporary hardness in water sample through O'Hener's method.
5. Dissolve oxygen analysis in water sample
6. Analysis of strength of HCl solution through NaOH solution by using pH meter

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	1		2		1			1				
CO2	3	3		3		2			2			1	
CO3	3	3		3		3			2		2	1	
CO4	3	3		3		2			2				
CO5	3	3		3		2			1		2	1	
CO6	3	3		3		3			2			1	

SUBJECT: Applied Mechanics LAB

SUBJECT CODE: DAM-151

Course Outcomes:

1. Learn basics of machine mechanics.
2. Students learn how to operate different lifting machines.
3. Students learn how to calculate mechanical advantage of different lifting machines.
4. Learn basics of principle of moments, resolution of forces and coefficient friction.
5. Students learn about efficiency of different machines

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1		1	3	1	1			1	1			
CO2	2		1			1							
CO3	1	1	1				1		2				
CO4	1	1	1	1									
CO5	1	1	1						1				

SUBJECT: Building Materials Lab

SUBJECT CODE: DCE 151

Course outcomes:

After successful completion of this course students will be

1. Able to design and test the materials either in the laboratory or in the field before their actual use at the site.
2. Able to Impart the knowledge about the characteristics, sources and defects in various materials used for construction purposes.
3. Able to attain the knowledge of different components of building, their classification, materials and methods of construction and causes of their failures.
4. To examine and identify different types of stones and aggregates i.e. the Visual identification of these materials specimen present in the Lab.
5. Identification of timbers i.e. the visual identification of specimen of different Exogenous Trees.
6. To determine the Strength of various Engineering Materials and Conduct the Field Test of Cement, Lime and Bricks.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	2			3					2	1			
CO2	3		3	2		1							
CO3	3			1	2				3				
CO4			2	3				3			1		
CO5	2		1	3		1	3						
CO6	1			3		2			3		3		

SUBJECT: Computer Application Lab

SUBJECT CODE: DCS-151

Course outcomes:

1. Bridge the fundamental concepts of computers with the present level of knowledge of the students.
2. Fundamental concepts of computers and its memory .
3. Fundamental concepts of programming Language C .
4. To prepare students in understanding ICT basics and to make aware of Office automation using MS- Office.
5. To Train students with basic concepts of programming using C.
6. To prepare students in understanding ICT basics and to make aware of Office automation using MS- Office. To Train students with basic concepts of programming using C

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	2	2	1						1			
CO2	1	1		3					2				
CO3	1			1	2					3			
CO4	1	2	3								1		
CO5	1		2	1	3					2	1		
CO6	1	1			2					3			

SECOND SEMESTER

SUBJECT: Applied Mathematics I (B)

SUBJECT CODE: DMA-201

Course outcomes:

1. Here Students are getting the knowledge of Graphs, Continuity and Differentiation by which they will be able to find areas of any surface. Fundamental concepts of computers and its memory.
2. By getting full knowledge of tangent and normal student will be able to use it in daily lives and further studies in Architectural Engineering, Civil Engineering etc. To prepare students in understanding ICT basics and to make aware of Office automation using MS- Office.
3. Definite and Indefinite integral knowledge makes students wide in solving problems related to big summations and areas related problems. Regarding applications student will be able to solve problems like finding the area bounded by simple curves, Volume of Solids of Revolution, mean value, mean square value, root mean square value of functions will be easily solved.
4. Applications of Integration will lead students to get a good knowledge of finding areas, volume etc.
5. Some different rules like Newton- Cote's Quadrature formula, sTrapezoidal Rule, Simpson's $1/3^{rd}$ rule and $3/8^{th}$ Rule.

CO-PO MAPPING													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13
CO1	3	3	3	3	2	1		3	2	3	2		
CO2	3	3	3	2	2	1		3	3	3	2		
CO3	3	3	3	3	2	1		3	2	3	2		
CO4	3	3	3	2	3	1		3	2	3	2		
CO5	3	3	3	3	2	1		3	2	1	2		

SUBJECT: Applied Physics (B)

SUBJECT CODE: DPH-201

Course Outcomes:

1. Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure
2. Student learn to analysis to effect of building acoustic condition
3. Student learn about application of ultrasound in various field like SONAR, medical and research work and sound signal etc.
4. The student learn to introduce and overview of optical fiber and process of transmission of signal and application of various field.
5. Student learns to investigate broken telegraph wire with the help of post office box.
6. Student learn to simplify the complicated circuit by using Kirchhoff's law
7. Student will be able to distinguish among various student in the basis of magnetic properties like Dia, Para and ferromagnetic and build the temporary and permanent magnet.
8. Student learns about LASER and various applications in various fields like medical etc.
9. Student learns about basic electronics which promote to learn the characteristics of transistor (amplifier).
10. X-ray and various properties in various field like medical engineering and research center etc.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1												1
CO2	2	1							2			1	
CO3	3	2		3		3			2				
CO4		3											1
CO5										3			
CO6													
CO7		3		3					3				
CO8									2				
CO9													
CO10						2			2				

SUBJECT: Applied Chemistry (B)

SUBJECT CODE: DCH-201

Course Outcomes:

1. Classification and properties of good fuels, calorific value and its determination, refining of petroleum, Benzol, power alcohol, Knocking of engine and anti-knocking agents used to reduce knocking, octane and cetane number, Bergius and Fischer Tropsch's method for hydrogenation of coal, Preparation and uses of Coal gas , oil gas, water gas biogas, LPG and CNG
2. Concept of Colloidal state of matters, preparation of colloids by physical and chemical method, protective colloids, properties of colloids: Brownian movement, Tyndal effect, Electrophoresis and Coagulation. Preparation of emulsion and its application;

   Lubricants and their types; Function, mechanism and its application in different industry; additive compounds in lubricant
3. IUPAC nomenclature of organic compounds, preparation and uses of ethane, ethane, ethyne, benzene and toluene.
4. Concept of electrophiles and nucleophiles, reaction intermediates: free radical, carbocation, carbanion mechanism of electrophilic and nucleophilic substitution reaction, addition, and elimination reactions
5. Polymers, synthesis properties and uses of addition and condensation polymers, biopolymers, manufacturing of soap, detergents, Preparation and uses of explosives: TNT, RDX, Dynamite,

   Synthesis and use of paint and Varnish.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3												
CO2	3	2		2		2			2				
CO3	3										2		
CO4	3												
CO5	3	2		2		1			2		2		

SUBJECT: Building Materials B

SUBJECT CODE: DCE-201

Course outcomes:

1. The course provides basic knowledge of the properties of essential materials, especially Timber, Steel, concrete and wood, heat insulation materials, Glass, Plastics and composites.
2. The candidate will learn the basic theory about important building materials.
3. Show the relationship between the choice of materials, physical material properties and environmental concerns.
4. 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, and carpeting.
5. To identify the methods for preservation of timber and metals.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3		3		2			1					
CO2	1	3										2	3
CO3	1		2			3				1	3		
CO4			2	3	1		3			3			
CO5			3	2		1					3		

SUBJECT: Applied Mechanics-B

SUBJECT CODE: DAM-201

Course Outcomes:

1. Understanding different units and its use in other subject.
2. Application of various laws in practical aspect..
3. Application of various theory.
4. Practical behaviour of friction.
5. Analyse couple and moment in different aspect and Its use.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1		1	3	1	1			1	1			
CO2	2		1			1							
CO3	1	1	1				1		2				
CO4	1	1	1	1									
CO5	1	1	1						1				

SUBJECT: Professional Communication

SUBJECT CODE: DPC-201

Course outcomes:

1. Introduction of the concept of communication, types skills,modern tools, etc..
2. 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.
3. The CO of this unit is to control sentence-level error (grammar, punctuation, and spelling)
4. Its outcome is to employ techniques of active reading, critical reading, and informal reading response for inquiry, learning, and thinking.
5. 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.
6. The conclusion of this subject is to increase the students' 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.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	2	3	1		1					1			
CO2	1	2			3					3			
CO3	1			3						1	2		
CO4			1	2	3								
CO5	1	2								3	2		
CO6								2	3	1			

SUBJECT: Applied Physics Lab

SUBJECT CODE: DPH-251

Course Outcomes:

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

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1	1	1	2	3	3	1	2	3				
CO2	2	2	2	2	3		1	2	2		2		
CO3	3	2	3	3	3	2	1	1	1		2		
CO4	3	2	2	3	3	3	3	3	2				

SUBJECT: Workshop practice

SUBJECT CODE: DWS-251

Course outcomes:

1- To acquire skills in basic engineering practice.

2- To identify the hand tools and instruments.

3- To acquire measuring skills.

4- To acquire practical skills in the trades.

5- To provides the knowledge of job materials in various shops.

6- To provides the knowledge of core technical subjects for making and working of any type of project.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
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
CO6	3					2	2	2			3	3	2

SUBJECT: Basic Computer Aided Design Lab

SUBJECT CODE: DCAD-251

Course Outcomes:

1. Students will develop good communication skills and team work.
2. Students will become familiar with office practice and standards.
3. Students will become familiar with Auto Cad's two dimensional drawings.
4. Student's ability to convert sketches into engineered drawings will increase.
5. Students will be able to draw orthographic projections and sections.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	2	3	3	2	1	1	1	1		1		
CO2	2	1	3	3	1	1	2	1	2		1		
CO3	1	3	1	3	2	1	2	2	1		2		
CO4	3	3	2	3	1	2	3	1	3	2	2		
CO5	1	2	3	3	3	1	3	2	1		3		

SUBJECT: Professional Communication

SUBJECT CODE: DPC-251

Course outcomes:

1. Introduction of International Phonetic Alphabet and Pronunciation practice.
2. 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.
3. 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
4. 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
5. 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
6. 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

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	2	3							1			
CO2	1	2		3									
CO3													
CO4	2	1		3	3					1			
CO5	3			1	2					3	1		
CO6		2			2				1	3	1		

THIRD SEMESTER

SUBJECT: Elementary Electrical and Mechanical Engineering

SUBJECT CODE: DCE-301

Course outcomes:

After successful completion of this course students will be able to

1. Basic concepts and working of different electrical lamps, wiring materials and accessories.
2. Study basic principles of operation, construction and specification of electrical machines
3. Identify the hand tools and instruments.
4. Knowledge of various machining operations and machine tools.
5. To understand the working of different I.C engines and different types of gears . Jack plane and material handling equipments

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1	1	1	1	1	1	1	1	2		2		
CO2	1	1	1	1	1	1	1	1	2	1	2		
CO3	1	1		1		1	1	1		1	1		

SUBJECT: Strength of Materials

SUBJECT CODE: DCE-302

Course outcomes:

After successful completion of this course, students will be able to

1. Analyze indeterminate structures like fixed and continuous beams of simple structures.
2. Analyze shear force and bending moments for different types of beams.
3. Study of different types of stresses and their variation along the length of beam.
4. Analyze columns and struts of simple structures and concept of direct & bending stresses of simple structures.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	3		3						2	1		
CO2	3	2	2							2			
CO3	2	3	2							2			
CO4	3	2	2							3			

SUBJECT: Hydraulics

SUBJECT CODE: DCE-303

Course outcomes:

After successful completion of this course students will be able to

1) Perform various tests regarding behaviour of fluid/liquid.
2) Interpret the problems related to fluid/liquid and apply for solving fluid mechanics problem.
3) Compute discharge and loss of head through pipes, open channels, notches another hydraulic structures.
4) To determine different types of pressure acting on a fluid.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	3		3		1							
CO2	2	3		2		2							
CO3	3	3	3			2							
CO4	2	2		3		1							

SUBJECT: Public Health Engineering I

SUBJECT CODE: DCE-304

Course outcomes:

After successful completion of this course students will be able to

1. Understand the terms involved in public water supply, domestic and industrial sewage.
2. Know different types of sources of water for public water supply
3. Understand the methods for estimating quantity of water supply required for city or town.
4. Suggest the treatment required by knowing the quality of water.
5. Understand the hydraulic design of Units in treatment plant.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	2	3		1									
CO2	2	3			2			2					
CO3	2	3			2			2			2		
CO4	2	3		1	1	2							
CO5	2	3				1	1						

SUBJECT:Building Construction &Maintainance Engineering-I

SUBJECT CODE: DCE-305

Course outcomes:

After successful completion of this course students will be able to

1. Know various technical terms related to different components of building structure.
2. Understand various construction processes of different building components with use of equipments.
3. Understand the process of setting out of building.
4. Know various materials required for execution of various construction processes.
5. Suggest rectifications for various defects in Building works.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	2		1		2							
CO2									3	2			
CO3	1	3			2						2		
CO4				3							2		
CO5			2	3		1							

SUBJECT: Concrete Technology-I

SUBJECT CODE: DCE-306

Course Outcomes:

After successful completion of this course, students will be able to

1. Identify the functional role of ingredients of concrete and apply this to mix design philosophy.
2. Acquire and apply fundamental knowledge in the fresh and hardened properties of concrete.
3. Develop an awareness of the utilization of waste materials as novel innovative for use in concrete.
4. Evaluate physical properties of cement, sand and aggregate.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1				3	1		2		3				
CO2	1		3	3		2					2		
CO3	2		2	2		1	3		2				
CO4	2		3	2					1	1			

SUBJECT: Strength of Material Lab

SUBJECT CODE: DCE-352

Course outcomes:

1. Demonstrate the basic principles in the area of strength and mechanics.
2. Evaluate the allowable loads and associated allowable stresses before mechanical failure.
3. Perform tests to measure the properties of the materials such as impact strength, tensile strength, compressive strength, hardness, ductility etc
4. Analyse the performance of deformable solids in various materials under the action of different kinds of loads.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	2	3		1							3		
CO2	2	3	1					2		2	3		
CO3	2	3				1		2			3		
CO4	2	3		1	1	2			2		3		

SUBJECT: Hydraulics Lab

SUBJECT: DCE -353

Course Outcomes:

After successful completion of this course, the students will be able to

1. Measure theoretical discharge in pipes, Venturi meter, orifice meter and notches.
2. Demonstrate and conduct experiment to find characteristic curves of various pumps.
3. Demonstrate and conduct experiment to find characteristic curves of various turbines.
4. Demonstrate the different losses in pipe.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1	3	2	3					2				
CO2	1	3	2	3					2				
CO3	1	3	2	3					2				
CO4	1	3	2	3					2				

SUBJECT: Concrete Technology & Building Construction and Maintenance Lab

SUBJECT CODE: DCE-356

Course outcomes:

After successful completion of this course students will be able to

1. To know about the different tests of cement and aggregate.
2. To know about the workability and strength of concrete.
3. To know the different type of concrete and mix design.
4. To know the basic properties of ingredients of concrete.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1				3		2		2	2		3		
CO2				3				2		2	3		
CO3		2		3		2		2	2		3		
CO4		2		3	1			2	1		2		

FOURTH SEMESTER

SUBJECT: Soil Mechanics &Foundation Engineering

SUBJECT CODE: DCE-401

Course Outcomes:

After successful completion of this course, students will be able to

1) Calculate standard soil properties and classify a soil.
2) Carry-out laboratory tests for measuring engineering property parameters of a soil sample.
3) Specify the essential features and requirements of site investigation.
4) Calculate stresses in soil under various loading conditions.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	2	3		3				3		3			
CO2	2	3		3				3		3			
CO3	2	3		2				3		3			
CO4	2	3		2				3		3			

SUBJECT: **Civil Engineering Drawing-I**

SUBJECT CODE: **DCE-402**

Course Outcomes:

After successful completion of this course students will be able to

1. Interpret conventional sign, symbols and working drawings of various civil engineering structures.
2. Prepare a detailed drawing for residential and public buildings.
3. Explain Building bye laws and Principles of Planning for residential and public buildings
4. Use software to prepare detailed drawing of residential and public buildings.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		3						2		2	1		
CO2		3					2				3		
CO3		3					2	2			3		
CO4		3					2	1		3			

SUBJECT: Surveying-I

SUBJECT CODE: DCE-403

Course Outcomes:

After successful completion of this course students will beagle to

1. Handle various survey instruments for a particular survey work.
2. Carry out various civil engineering survey works.
3. Collect and analyse survey data for preparing drawings and maps.
4. Do different methods and their procedure for levelling.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	3	3	2		1	3	2					
CO2	3	2	2	1		1	2	2					
CO3	2	2	1			1	1						
CO4	3	2	3				2						

SUBJECT: Public Health Engineering-II

SUBJECT CODE: (DCE-404)

Course Outcome:

After successful completion of this course students will be able to

1. To know the basic knowledge about wastewater.
2. To know different techniques for treatment of waste water.
3. To know the sanitation system and disposal of the sewage.
4. To know about drains and sewer sections.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1		2	3	2	3		2	2	2	2		
CO2	2			3	2	3	2	2	2	2			
CO3	1		2	3	2	3	2	2	2	2	2		
CO4	2		2	3	2	3		2	2	2			

SUBJECT: Building Construction & Maintainance Engineering -II

SUBJECT CODE: DCE-405

Course outcomes:

After successful completion of this course students will be able to

1. Students are able to understand the property, use, advantage and disadvantage of different material used in construction.
2. Identify the components of building and differentiate various types of building materials depending on its function.
3. Students are able to understand construction procedure of different components.
4. Students will Learn Details and Structure of all Parts and Components of the Building.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3			2				1					1
CO2		2	2		3	1							1
CO3	1	2	3			2		1					1
CO4	3	3							3	1	2		

SUBJECT: Concrete Technology-II

SUBJECT CODE: DCE-406

Course outcomes:

After successful completion of this course students will be able to

1. Know the Basic properties of ingredients of concrete.
2. know about the workability and strength of Concrete.
3. know the different type of concrete and mix design.
4. know about the concreting techniques

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		3		2		2			1		2		
CO2	2	3			1				2		2		
CO3	2	3	2						1		2		
CO4		3	2	1	1	2					2		

SUBJECT: Soil Mechanics Lab

SUBJECT CODE: DCE-451

Course outcomes:

Determination of moisture content and specific gravity of soil particles by different method.

Determination of soil particles size and its liquid limit and plastic limit.

Analysis of Shear strength of sand by Shear test.

Experiment related to civil engineering materials using different tools and their application

CO-PO MAPPING													
	PO	**PO**	**PO**	**PO**	**PO**	**PO**	**PO**	**PO**	**PO**	**PO**	**PO**	**PO**	**PO**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
CO1	2			3					1	2			
CO2	1			3					3	2			
CO3	2			2					1	3			
CO4	2			3					1	3			

SUBJECT: Surveying Lab-1

SUBJECT CODE: DCE-453

Course outcomes:

1. Measuring angles between the lines meeting at a point by prismatic compass.
2. To find the difference of level between two distant points by taking staff readings on different stations from the single setting.
3. To find the difference of level between two points by taking at least four change points.
4. Taking offsets and setting out right angles with cross staff and Indian optical square.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	2			3					1	2			
CO2	1			3					3	2			
CO3	2			2					1	3			
CO4	2			3					1	3			

SUBJECT: Public Health Engineering Lab

SUBJECT CODE: DCE-454

Course outcomes:

At the end of the course student will able

1. To impart students with strong knowledge of water drinking standards for public health.
2. Analyse various physio-chemical and biological parameters of water in case of quality requirements.
3. At the end of the course student will be able to assess complete water quality assessment for EIA &domestic supplies.
4. Student will suggest various types of treatment methods required to purify raw water with different contaminants.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	-	1	1	3	3	3	1	3	1	1	3		
CO2	-	1	1	3	2	3	1	3	1	1	3		
CO3	-	1	1	3	3	3	1	2	1	1	3		
CO4	-	1	1	3	3	3	1	3	2	1	3		

FIFTH SEMESTER

SUBJECT: Design of Reinforced Concrete structure-I

SUBJECT CODE: DCE-501

Course Outcomes:

After successful completion of this course students will be able to

1) Explain the basic concepts of structural design Methods of RCC to the practical problem.
2) Know the concepts of Pre-stressed concrete.
3) Use the Knowledge in structural planning and design of various component of buildings.
4) Explain and design of Slabs & lintel.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		3	2					3	2		3		
CO2			2					3	3		3		
CO3		3	2					3	3		3		
CO4		3	2					3	2		3		

SUBJECT: Transportation Engg.

SUBJECT CODE: DCMS-502

Course outcomes:

After successful completion of this course students will be able to

1. Handle the design, construction, and operation of railroads and mass transit systems that use a fixed guide way.
2. Tasks that include determining horizontal and vertical alignment design, station location and design, and construction cost estimating.
3. Will able to design and construct airports.
4. Can account for the impacts and demands of aircraft in their design of airport facilities.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		3		2					2	2			
CO2		3	2		2	2			2	2			
CO3	2	3	3				2		2	2			
CO4		3	3			2		2	2				

SUBJECT: Construction Equipment & Maintenance

SUBJECT CODE: DCMS-503

Course outcomes:

By the end of this course, a student will:

1. Know the different construction equipment.
2. Know the uses of construction equipment.
3. Know the maintenance technique of different construction project.
4. Able to handle the different construction conditions.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		3	2					2	3				1
CO2		3	3					2	3				1
CO3		3	2						3				1
CO4		3	3	1					3	2			1

SUBJECT :Irrigation Engineering

SUBJECT CODE: DCE-504

Course outcomes:

After successful completion of this course students will be able to

1. Apply the knowledge of irrigation engineering to determine crop water requirement.
2. Explain the dams, reservoir and barrage and their utilities.
3. Describe canal regulation work, cross drainage work, problems of water logging and their prevention.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	2		2	1		2		2			3		
CO2	2	2	2		2			2			1		
CO3	2	3	2		2	2		2			3		

SUBJECT: Surveying- II

SUBJECT CODE: DCE-505

Course Outcome:

After successful completion of this course students will be able to

1. Handle various survey instruments for a particular survey work.
2. Carry out various civil engineering survey works.
3. Collect and analyze survey data for preparing drawings and maps.
4. Apply checks for errors elimination.
5. Perform setting of horizontal curves on field.
6. Carry-out survey work using theodolite and total station.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	2	2	2	2	1	2	2			1	2	2
CO2	3	3	2	1	2	1	2	1	1		1	2	3
CO3	2	3	2	1	2	2	2	1	2		1	2	2
CO4	2	1	2	3	2	2	1				2	3	2
CO5	3	3	3	2	2	1	3	1			2	2	2
CO6	3	3	2	3	2	3	2	2	2		3	3	2

SUBJECT: Project Management in Construction

SUBJECT CODE: DCMS-506

Course outcomes:

1. On completion of this course the students will be able to know resource planning and management in construction.
2. Plan and manage key human resource functions within organizations.
3. To understand the lines of authority and procurement management in construction projects.
4. To have the idea of different risks associated with construction industry and remedial measures.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		2	1		2							3	3
CO2		3	2		1							2	2
CO3		3	3		3							1	2
CO4		2	1		3							3	1

SUBJECT: Surveying-II Lab

SUBJECT CODE: DCE-555

Course Outcome:

1. Know about the working of plane table.
2. Prepare the contour map
3. Find the difference of level between the points.
4. Record and observing necessary observation with the survey instruments.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		3	3	3				2	3				
CO2		3	3	2				2	3				
CO3		3	3	3				2	3				
CO4		3	3	3				2	3				

SUBJECT: Field Exposure

SUBJECT CODE: DCE-557

Course Outcomes:

After successful completion of this course, the students will be able to

1. Handle and execute the civil engineering projects in the field.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		3	3	2	2	1		1		1	2	2	

SIXTH SEMESTER

SUBJECT: Design of Reinforced Concrete structure-II

SUBJECT CODE: DCE-601

Course Outcomes:

Upon completion of the course, students will be able to:

1. Have acquired in-depth knowledge and critical understanding of the theory and principles of design and solution of Reinforced Concrete structures, since they could use new technologies and information systems in the design of civil Engineering structures with Reinforced concrete.
2. Be able to perceive, design and analyze Reinforced Concrete structures (Beams, Columns, Frames)
3. To have the ability to compose, solve and evaluate the internal forces (N, Q, M), the deformations, the stresses and reinforcements in various structures made of Reinforced Concrete.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		3		2	3			2					
CO2		3				2		3			2		
CO3	2	3								2	3		

SUBJECT: Field Practices in construction

SUBJECT CODE: DCMS-602

Course outcomes:

After successful completion of this course students will be able to

1. Understanding of organizational and technological aspects of building construction and infrastructure engineering structure construction.
2. Ability to design organization and technology of construction work performance during construction preparation stage
3. Ability to identify and resolve organizational and technological problems during t he construction process
4. Ability to organize the construction site and operate the construction of infrastructure engineering and building construction structure.

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CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		1			2				3	1	2		
CO2	1	2	2			2	2	1	2	2			
CO3		1	3	2	1		3	2	1	2			
CO4			2	1	3	2	1			2			

SUBJECT: Estimating Costing and valuation

SUBJECT CODE: DCE-603

Course Outcome:

After successful completion of this course students will be able

1. To know the basic measurements method, rate analysis, quantity of items and valuation of properties.
2. To know about specifications and rate analysis.
3. To know the estimation and valuation.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	3	3	2				3	3	1	2	2	2	2
CO2	3	3	3					2	2	1	1	1	2
CO3	3	2	2					1	2	1	1	2	2

SUBJECT: Design of Steel and Masonry Structure

SUBJECT CODE: DCE-604

Course outcomes:

After successful completion of this course students will be able

1) Understand the analysis of forces acting on different members and select proper material and sections from steel table.
2) Understand the design of tension members, compression members, beams, purlins, column bases and steel roof trusses and understand design values for members using IS 800-2007.
3) Understand and interpret the fabrication drawings and structural drawings.
4) Understand the drawings of designed sections of steel roof truss and its connections.
5) Understand the use of IS 875-1987 part I to IV, provisions for dead loads, live loads and wind loads and seismic loads (Earthquake loads)

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	2	3											3
CO2	2	3						2				2	3
CO3	2	3						2			2		3
CO4	2	3		1	1	2							3
CO5	2	3											3

SUBJECT: Quality & Safety Management In Construction

SUBJECT CODE: DCMS-605

Course outcomes:

By the end of this course, a student will:

1. Evaluate workplace to determine the existence of occupational Quality & Safety hazards.
2. Identify relevant regulatory and national consensus standards along with best practices that are applicable.
3. Select appropriate control methodologies based on the hierarchy of controls
4. Analyse injury and CO data for trends.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		1	3	1	3		1	1	3	2	3	3	2
CO2		1	3	1	3		1	1	3	2	2	2	2
CO3		1	3	1	3		2	1	3	2	3	3	2
CO4		2	2	1	3		1	1	2	2	2	3	2

SUBJECT: Contract Management

SUBJECT CODE: (DCMS-606)

Course outcomes:

By the end of this course, a student will:

1. Understand basic contract law.
2. Understand contract management terminology.
3. Plan and organise contracts for goods and services
4. Define the scope of work, process, agreement and management philosophy
5. Direct and control the contract administration
6. Negotiate contracts and terms
7. Evaluate, negotiate and enforce service level agreements, and renegotiate and/or terminate contracts.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1		1	2	1	3	1	2	1	2	3	1	1	3
CO2		1	2	1	3	2	2		2	3	1	1	3
CO3		1	2	1	3	3	2		1	3	1	2	3
CO4		2	2	1	3	2	3		2	3	1	3	3
CO5		1	2	1	2	1	2		2	3	1	1	3
CO6		1	2	1	2	1	1		1	3	1	1	3
CO7		1	2	1	3	3	3		1	3	1	1	3

SUBJECT: Reinforced Cement Concrete And Highway Lab

SUBJECT CODE: DCE-651

Course Outcomes:

After successful completion of this course, the students should be able to

1. Assess the quality of the concrete through laboratory tests.
2. Design the mix proportion for the required concrete strength
3. Assess the quality of bitumen through laboratory tests.
4. Assess the properties of sub grade soil through laboratory tests.

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1	3	2	3	1				2	2			
CO2	1	3	1	3	1	2			2	2			
CO3	1	3	2	3	1				2	2			
CO4	1	3	2	3	1				2	2			

SUBJECT: Project

SUBJECT CODE: DCE -657

Course outcomes:

After undergoing the project work, students will be able to:

1. Develop understanding regarding the nature of fieldwork in which students are going to play their role after completing the courses of study.
2. Develop understanding of subject based knowledge given in the classroom in the context of its application at work places
3. Develop abilities like interpersonal skills, communication skills, positive attitudes and values.
4. Develop first-hand experience and confidence

CO-PO MAPPING													
	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**
CO1	1	3	3	2	3	3	2	2	1	2	3		2
CO2		3	3		2				3			2	
CO3		3	3		3	1		3				3	
CO4		3	3		2	2							1

DIPLOMA IN ARCHITECTURE

PROGRAM EDUCATIONAL OUTCOMES

(PEO)

Integral University Polytechnic has a unique set of learning outcomes related to the university's institutional mission and goals, and more importantly, critical objectives specific to the course Diploma in Architecture. The Academic course structure is designed to equip student with knowledge and skills critical to ensuring their success for a future in the Profession.

Students' learning aspirations include

- ✓ Being broadly educated Valuing lifelong inquisitiveness.
- ✓ Communicating graphically in a range of media.
- ✓ Recognizing the assessment of evidence.
- ✓ Comprehending people, place, and context.
- ✓ Recognizing the disparate needs of client, community, and society.
- ✓ Creating building designs with well-integrated systems.
- ✓ Comprehending constructability.
- ✓ Incorporating life safety systems.
- ✓ Integrating accessibility.
- ✓ Applying principles of sustainable design.
- ✓ Knowing societal and professional responsibilities.
- ✓ Comprehending the business of building.
- ✓ Collaborating and negotiating with clients and consultants in the design process.
- ✓ Discerning the diverse roles of architects and those in related disciplines.
- ✓ Integrating community service into the practice of architecture.
- ✓ Synthesizing variables from diverse and complex systems into an integrated architectural solution.
- ✓ Rationalizing environmental stewardship goals across multiple systems for an integrated solution.
- ✓ Evaluating options and reconciling the implications of design decisions across systems and scales.

DIPLOMA IN ARCHITECTURE

PROGRAM SPECIFIC OUTCOMES

(PSO)

- The program will make student equip with all skills and theoretical knowledge needed to Design and Draft an Architectural Design and Drawings.
- Students will be able to read and realize any given Architectural working or Technical drawings that will grant them the ability of understanding the execution of those drawing in building construction, with that they will be able to manage the construction on the field.
- Students will be well aware of the Building materials and construction method and process, along with the knowledge of calculating their quantities and other technical data requirements that make them eligible to make an Estimate of any Building Structure.

DIPLOMA IN ARCHITECTURE

PROGRAM OUTCOMES

(PO)

- PO 1. Fundamental Science Give a basic understanding of science and learn fundamental skills to provide structure that support future Architecture studies.

- PO 2. Improve the ability to make technically clear drawing as well as differences between 2D & 3D with basic design criteria including elements and principles.

- PO 3. Prepare drawing with precision after calculating loads and several surveys.

- PO 4. Understanding of the basic principles and appropriate application and performance of building service systems, including lighting, mechanical, plumbing, electrical, communication, vertical transportation, security, and fire protection systems.

- PO 5. An ability to design buildings and to meet desired needs of client with in realistic constraints for favoring climatic conditions as well as economic, environmental, social, ethical, health and safety, manufacturability, and sustainability.

- PO 6. Presentation of Design Implement complex two and three-dimension graphic representation techniques using wide variety of traditional or digital media and explain or represent the process of architecture design.

- PO 7. Building Design criteria & Interior Designing through appropriate technical documentation in manner that is client-centered, sustainable, aesthetic, cost effective, and socially responsible that also follows the norms and guidelines of the local development authority.

- PO 8. Understanding of the relationships among key stakeholders in the design process—client, contractor, architect, user groups, local community—and the architect's role to reconcile stakeholder needs.

- PO 9. Understanding of the parallel and divergent histories of architecture and the cultural norms of a variety of indigenous, vernacular, local, and regional settings in terms of their political, economic, social, ecological, and technological factors.

- PO 10. Ability to Identify & apply the modern techniques to be considered in construction of buildings and develop the construction practices.

- PO 11. Ability to demonstrate the basic principles of structural systems and their ability to withstand gravitational, seismic, and lateral forces, as well as the selection and application

of the appropriate structural system.

- PO 12. Estimation and costing One of the most important factors that affect development or criteria for any design and its construction is the founds required for it to be visualized in reality. Hence, the course thoroughly addresses the subject.

- PO 13. Understanding of the diverse needs, values, behavioral norms, physical abilities, and social and spatial patterns that characterize different cultures and individuals and the responsibility of the architect to ensure equity of access to sites, buildings, and structure.

DIPLOMA IN ARCHITECTURE

COURSE OUTCOMES

(CO)

S.no.	Subject Name	Subject Code	Outcome Description
1.	Applied Mathmatics -1(A)	DMA-101	• Arithmetic Progression is a sequence of numbers such that the difference between the consecutive terms is a constant. Looking at this definition one can say that A.P can be applied in real life by analyzing a certain pattern that we see in our daily life. For example, when you are waiting for a bus, assuming that the traffic is moving with a constant speed we can predict when the next bus will come. • Geometric Progression happens whenever each agent of a system acts independently and is fixed. An example of it is- A population growth in which each people decide not to have another kid based on current population then population growth each year is geometric. • Use of Matrix and Determinants: • In IT sector to keep a close account on statistics, manage databases and carry out search engine query etc. • In Geological sector it is used to carry out readings of seismic waves and to have a study on the graph made by it. • Trigonometry is basically calculations with triangles and it 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. • The concept of Complex Number is used in the field of Computer Science. It is used in coding and programming. • Coordinate Geometry has application in the field of construction. The sketch of a building is pure geometry. It is also used for finding the distance between places and in geography also it has many applications. In Astrophysics to find the distance between planets.
2.	Applied Physics (A)	DPH-101	• Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure • In this student learn investigate the effect of gravity and friction on the motion of machines (mechanical) instrument etc. • Students learn to introduce and explain

			fundamental of fluids mechanics which is used in the application of aerodynamics, hydraulics, marine, dynamic etc. • students learn energy transfer to one gear to another gear in machine and instrument etc. • students learn to analyses some real problem and to formulate the condition of theory of elasticity and application. • The student learns to formulate the 1st law of thermodynamics for a close system and arrangement the change in energy in the closed system via heat and work transfer. • Distinguish heat transfer by conduction, convection and radiation and calculate the amount of heat energy transfer. • Calculate the change in moving boundary work, electrical work shop in close system. • Student learns about different thermal process.
3.	Applied Chemistry (A)	DCH-101	• Basic concept of atomic structure, Matter wave concept determination of quantum numbers, periodicity of elements in periodic table. • Idea of various types of chemical bonding, VSEPR theory, Valence bond theory and Molecular orbital theory • Concept of acid base theory, pH scale, buffer solution, indicators, common ion effect, electrode potential, Galvanic cell and electrolytic cell, applications of electrochemical series, corrosion and its prevention • Rate of reaction, rate constant, molecularity and order of reaction; Understanding of catalyst and their use in various types of reactions; different types of solid and band theory of solids; types of crystal and imperfection of crystal • Understanding of soft and hard water; types of hardness present in water; analysis of water hardness and their softening by using Soda-Lime, Zeolite and Ion exchange method; disadvantage of hard water in different industry; disinfection of water: Municipality waste water treatment
4.	Technical drawing -I	DAR-101	• Students shall be familiarized with a range of techniques of expression beginning with manual drawing. • They will learn drafting, lettering and rendering techniques. • They will learn about the differences between 2D & 3D objects.
5.	Building Material	DAR-102	• Identify and characterize building materials • Understand the manufacturing process of bricks and cement

			• Identify the methods for preservation of timber and metals • Learn the basic theory about important building material.
6.	Electrical Engineering	DAR-103	• Fundamental Science Give a basic understanding of science and learn fundamental skills to provide structure that support future Architecture studies • Improve the ability to make technically clear drawing as well as differences between 2D & 3D with basic design criteria including elements and principles. • Prepare drawing with precision after calculating loads and several surveys. • Understanding of the basic principles and appropriate application and performance of building service systems, including lighting, mechanical, plumbing, electrical, communication, vertical transportation, security, and fire protection systems. • An ability to design buildings and to meet desired needs of client with in realistic constraints for favoring climatic conditions as well as economic, environmental, social, ethical, health and safety, manufacturability, and sustainability. • Presentation of Design Implement complex two and three-dimension graphic representation techniques using wide variety of traditional or digital media and explain or represent the process of architecture design. • Building Design criteria & Interior Designing through appropriate technical documentation in manner that is client-cantered, sustainable, aesthetic, cost effective, and socially responsible that also follows the norms and guidelines of the local development authority. • Understanding of the relationships among key stakeholders in the design process client, contractor, architect, user groups, local community and the architect's role to reconcile stakeholder needs. • Understanding of the parallel and divergent histories of architecture and the cultural norms of a variety of indigenous, vernacular, local, and regional settings in terms of their political, economic, social, ecological, and technological factors. • Ability to Identify & apply the modern techniques to be considered in construction of buildings and develop the construction practices. • Ability to demonstrate the basic principles of

			structural systems and their ability to withstand gravitational, seismic, and lateral forces, as well as the selection and application of the appropriate structural system. • Estimation and costing One of the most important factors that affect development or criteria for any design and its construction is the founds required for it to be visualized in reality. Hence, the course thoroughly addresses the subject. • Understanding of the diverse needs, values, behavioral norms, physical abilities, and social and spatial patterns that characterize different cultures and individuals and the responsibility of the architect to ensure equity of access to sites, buildings, and structures.
7.	Applied Chemistry Lab	DCH-151	• Analysis of acid and basic radical of inorganic mixture • Determination of chloride content by Mohr's method in supplied water • Testing of total hardness of water sample by EDTA titration method in terms of $CaCO_3$ • Analysis of temporary hardness in water sample through O'Hener's method. • Dissolve oxygen analysis in water sample. • Analysis of strength of HCl solution through NaOH solution by using pH meter.
8.	Building Material Lab	DAR-152	• Able to test the materials either in the laboratory or in the field before their actual use at the site. • Able to Impart the knowledge about the characteristics, sources and defects in various materials used for construction purposes. • Able to attain the knowledge of different components of building, their classification, materials and methods of construction and causes of their failures. • To examine and identify different types of stones and aggregates i.e. the Visual identification of these materials' specimen present in the Lab. • Identification of timbers i.e. the visual identification of specimen of different Exogenous Trees. • To determine the Strength of various Engineering Materials and Conduct the Field Test of Cement, Lime and Bricks.
9.	Electrical	DAR-153	• Staircase lighting system using two-way switch.

	Engineering Lab		• Study of corridor lighting system. • Practice of making T and mesh joint. • Testing of open circuit and short circuit faults in electrical installations by Megger.
10.	Computer Application Lab	DCS-151	• Students become familiar with the basic fundamentals and concepts of Computer • Practical knowledge of the MS Office package, viz. MS Word, MS Excel and MS PowerPoint • Students are trained with the basic concepts of the programming language. • The course is designed to provide complete knowledge of C language. • Students will be able to develop logics which will help them to create basic programs and applications in C. • By learning the basic programming constructs, they can easily switch to any other language in future.
11.	Applied Mathmatics -1(B)	DMA-201	• Here students are getting the knowledge of Graphs, continuity, and differentiation by which they will be able to find areas of any surface. • 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. • Definite and Indefinite integral knowledge makes students wide in solving problems related to big summations and areas related problems. Regarding applications students will be able to solve problems like 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 will be easily solved. • Applications of Integration will lead students to get a good knowledge of finding areas, volume etc. • 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.
12.	Applied Physics (B)	DPH-201	• Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure • Student learn to analysis to effect of building

			acoustic condition • Student learn about application of ultrasound in various field like SONAR, medical and research work and sound signal etc. • The student learns to introduce and overview of optical fiber and process of transmission of signal and application of various field. • Student learns to investigate broken telegraph wire with the help of post office box. • Student learn to simplify the complicated circuit by using Kirchhoff's law • Student will be able to distinguish among various student in the basis of magnetic properties like Dia., Para and ferromagnetic and build the temporary and permanent magnet. • Student learns about LASER and various applications in various fields like medical etc. • Student learns about basic electronics which promote to learn the characteristics of transistor (amplifier). • X-ray and various properties in various field like medical engineering and research center etc.
13.	Applied Chemistry (B)	DCH-201	• Classification and properties of good fuels, calorific value and its determination, refining of petroleum, Benzol, power alcohol, Knocking of engine and anti-knocking agents used to reduce knocking, octane and cetane number, Bergius and Fischer Tropsch's method for hydrogenation of coal, Preparation and uses of Coal gas , oil gas, water gas biogas, LPG and CNG • Concept of Colloidal state of matters, preparation of colloids by physical and chemical method, protective colloids, properties of colloids: Brownian movement, Tyndal effect, Electrophoresis and Coagulation. Preparation of emulsion and its application; Lubricants and their types; Function, mechanism and its application in different industry; additive compounds in lubricant • IUPAC nomenclature of organic compounds, preparation and uses of ethane, ethane, ethyne, benzene and toluene. • Concept of electrophiles and nucleophiles, reaction intermediates: free radical, carbocation, carbanion mechanism of electrophilic and nucleophilic substitution reaction, addition, and elimination reactions. • Polymers, synthesis properties and uses of addition and condensation polymers, biopolymers, manufacturing of soap, detergents, Preparation and uses of explosives: TNT, RDX, Dynamite, Synthesis and use of paint

			and varnish.
14.	Technical drawing - II	DAR-201	• 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. • To develop perception and presentation of architectural forms and buildings. • Student shall be familiarized with a range of techniques of expression beginning with manual drawing. • Familiarization with drafting tools and accessories.
15.	Fundamentals of architecture	DAR-202	• Students will be able to learn about the evolution of architecture from ancient to modern world. • Students will be able to learn about the basic design and basic understanding of form, order and space in architecture. • They will also learn about human activities, space required for activities.
16.	Professional Communication	DPC-201	• Introduction of the concept of communication, types skills, modern tools, etc. • 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. • 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. • 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. • The conclusion of this subject is to increase the students' 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.
17.	Applied Physics Lab	DPH-251	• To gain practical knowledge by applying the experimental methods to correlate with the Physics theory. • Experience and understand basic physical fundamentals and the key vocabulary to describe them: basic Electronics & Electrical, kinematics, dynamics, work and energy,

			gravitation, fluids • Develop skills in observation, interpretation, reasoning, synthesis, generalizing, predicting, and questioning as a way to learn new knowledge • Apply conceptual understanding of the physics to general real-world situations
18.	Basic Computer Aided Design Lab	DCAD-251	• Learn basic auto Cad skills. • Students learn how to operate Auto Cad and transform sketches and technical data into electronic drawings. • Understand modeling of curves, surfaces and solids. • Transform, manipulate the object and understand rapid prototyping and tooling concept in any real-life application. • Understand FEM based problems.
19.	Workshop Practice	DWS-251	• To acquire skills in basic engineering practice. • To identify the hand tools and instruments. • To acquire measuring skills. • To acquire practical skills in the trades. • To provides the knowledge of job materials in various shops. • To provides the knowledge of core technical subjects for making and working of any type of project.
20.	Professional Communication Lab	DPC-251	• Introduction of International Phonetic Alphabet and Pronunciation practice. • 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. • 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. • 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. • 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
21.	Surveying	DAR-301	• Handle various survey instruments for a particular survey work. • Carry out various civil engineering survey works. • Collect and analyses survey data for preparing drawings and maps. • Apply checks for errors elimination.
22.	Building services - I	DAR-302	• The course aims at elementary building services of Water supply, Drainage, Electrical and Lighting. • Students will also be aware of simple drainage systems for small buildings, the incorporation of Electrical and Lighting Services in building design. • The students are to know, how to prepare layout and details for design project in architectural design.
23.	Design with climate	DAR-303	• This subject enlightens the students to the processes by which building and entire habitats can be designed to respond to nature, with climate as the basic parameter of design. • Enable students to understand design strategies for different climatic regions. • Also Familiarizing students with modern techniques to analyse climatic parameters and design buildings accordingly. • Introduction to elementary principles of bioclimatic studies with respect to buildings and human comfort.
24.	Architecture graphics - I	DAR-304	• Architectural Graphics focuses on the techniques, methodologies, and graphic tools used in visualizing, creating and conveying architectural ideas and concepts. • The subject focuses on to develop perception and presentation of architectural forms and buildings.
25.	Strength of Materials	DAR-305	• Analyze indeterminate structures like fixed and continuous beams of simple structures. • Analyze shear force and bending moments for different types of beams. • Study of different types of stresses and their

			variation along the length of beam. • Analyze columns and struts of simple structures and concept of direct & bending stresses of simple structures.
26.	Architecture design -I	DAR-306	• The subject focuses on the basic design and basic understanding of form, order and space in architecture. • Enable students to learn about the human activities and space required for activities and also Understanding design as function. • They will learn about the differences between 2D & 3D objects.
27.	Survey Lab	DAR-351	• Identify the different instruments for linear measurement. • Identify the different instruments for angular measurement. • Identify the different instruments for levelling. • Record and observing necessary observation with the survey instruments.
28.	Model workshop	DAR-356	• Student will be able to handle various material, adhesives for model making. • They will also be able to learn use of different types of colors. • they will learn to differentiate between different types of models like site models, block models and finished presentation models.
29.	Building services - II	DAR-401	• The subject aims at Understanding complex services in multi-storied buildings. They will understand the architectural content of services in buildings. • They will understand advanced building services pertaining to natural and mechanical ventilation, and their application to build forms. • To make students aware about Fire- fighting methods, rules, regulations and equipment.
30.	History of architecture	DAR-402	• The emphasis of this subject is to highlight the salient features of a style, awareness about the planning, construction, function and aesthetics of historical buildings. • They will appreciation of architectural style as a product of the time, place and culture in the western world. • Introduction to the architecture of the ancient world and understanding architecture of periods in terms of space, form and structure. • Familiarizing with typical examples of building type.
31.	Building construction – I	DAR-403	• Building construction is the method, procedure and execution in reality of any Architecture

			Design. Building construction is a prime aspect of Architecture, as it is what bring a Hypothetical or proposed Architectural Design and ideas to be recognize in actuality.
32.	Architecture graphics – II	DAR-404	• Architecture graphics-II proceeds the goal of its predecessor, which improve upon the skills learned that are helpful throughout the development and evolution of an Architectural design form inception to its competition.
33.	Environmental Studies	DAR-405	• Understand the natural environment • Natural environment relationships with human activities. • Characterize and analyze human impacts on the environment. • Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.
34.	Architecture design – II	DAR-406	• Making student learn about the art of collecting data and to carry out analysis for the process of evolving design and individuality of approach. • Students will understand about site planning: organization, scale, hierarchy, orientation and climate. • Students will understand about the layout and services of large public buildings with specialized services. • Students will Understand design as a function of specific agenda of repetitive units, site conditions, orientation and climate.
35.	AutoCAD lab	DAR-451	• Students will become familiar with office practice and standards. • Students will become familiar with Auto Cad two dimensional drawings.
36.	Construction Technique Lab	DAR-456	• Construction lab is the onsite implementation of the theories learned in building construction; it further assures the understanding of building construction but also makes them aware of the errors that appear while implementation of those theories.
37.	Estimation and costing - I	DAR-501	• Before start of any Architecture Project, it is wise to know the Cost of the Project for its practical and economic feasibility. The cost of the project is determined through Estimation and costing. • Estimation and Costing-I is an introduction and basic knowledge of terminology and methods that goes into making an estimate.
38.	Building construction - II	DAR-502	• Building Construction-II further goes in depth detail analysis of construction in Architecture, which helps to enhance practical knowledge,

			skills and awareness in construction on field while an Architecture design is being executed.
39.	Interior design	DAR-503	• Architecture design is not complete without an Interior. In other words, Interior is a key influential part of any Architecture Design. It not only helps in further customization to enhance a Design. But also, its functional and psychological benefits cannot be remiss about. • The spaces, facilities and services allocated in a particular Design with Interior design are made into functionally usable and livable spaces appropriately aligned with the purpose of Design or designer accordingly. Interior design gives a better visualization of the space and how it will emerge after competition not only to Designer but also to the client as well.
40.	Working drawing	DAR-504	• 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. • The subjects should also focus on developing design abilities by applying basic principles of • construction and choosing appropriate materials and techniques.
41.	Structure design	DAR-505	• The subject aims at clarify the basic principles underlying the inventions of various structural ideas with a view to bridge the gap between architectural theory and structural reality. • And also, to understand the relationship between architectural structure and architectural form with a view to stimulate the faculty of conceiving and developing new systems. • They will learn basic differences and importance of architect and structural engineer for each other.
42.	Building contract	DAR-506	• The subject aims to acquaint the students with most of the general aspects of tender and contracts in very deep detail.
43.	Architecture design – III	DAR-507	• Architecture Design is the soul of Architecture. The objective of Architecture is to Design, the framework of design encompasses almost everything manmade, but it is generally associated with any building environment, structure or object from town planning, urban design, and landscape to furniture and objects. All the other subjects contribute to make an Architecture Design, such is their relevance and Design's importance in Architecture. • One who acquires the skills and knowledge required to make an Architecture Design can arguably be called an Architect.

44.	Town planning	DAR-508	• The subject focuses on generating an understanding about the development of civilization and its architectural implications. • Learning about different types of city planning. • Studying Town planning helps students to relate the architectural projects in context of planning.
45.	Field exposure	DAR-557	• The aim of the 'Practical Training' is to enable the students to gain the kind and range of practical • experience which will prepare them for their likely responsibilities, immediately after qualifying D. Arch. Course.
46.	Estimation and costing – II	DAR-601	• Estimation and costing-II builds upon the foundation provided in Estimation and Costing-I. It goes in details of data requirements, material and quantity analysis, method and procedure, which makes them eligible for making an estimate of any proposed or already constructed Architecture design from start to finish.
47.	Modern trends in architecture	DAR-602	• The subject aims at understanding the development in the Western Architecture. • They will learn from Renaissance to the Contemporary with emphasis on the underlying parameters, philosophy, intentions. • And also, about expressions of associated periods/ movements as a response to the context of time, location and aspirations.
48.	Landscape design	DAR-603	• The subject focuses on reorganization of landforms, plantation water bodies and structures as major landscape elements. • They will learn about the various principles and elements of landscape design. • And also helps in understanding the various landscape styles and techniques. • They will learn about different trees, shrubs and grasses.
49.	Arch. project	DAR-604	• The subjects aim at preparing a student to independently handle and present all aspects of an architectural design from its evolution to final solution in totality. • Students will be able to understand the importance of the evolutionary stages of a design process • They will learn about Various techniques required for a successful presentation of an architectural design.

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping													
Subject Name				Subject Code			Branch					Year	
Applied Mathmatics-1(A)				DMA-101			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome											
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Arithmetic Progression is a sequence of numbers such that the difference between the consecutive terms is a constant. Looking at this definition one can say that A.P can be applied in real life by analyzing a certain pattern that we see in our daily life. For example, when you are waiting for a bus, assuming that the traffic is moving with a constant speed we can predict when the next bus will come. Geometric Progression happens whenever each agent of a system acts independently and is fixed. An example of it is- A population growth in which each people decide not to have another kid based on current population then population growth each year is geometric. Use of Matrix and Determinants: In IT sector to keep a close account on statistics, manage databases and carry out search engine query etc. In Geological sector it is used to carry out readings of seismic waves and to have a study on the graph made by it.	3	2	1	2	1	1	1	-	1	1	1	1	1

2	Trigonometry is basically calculations with triangles and it 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.	3	2	1	2	3	2	3	3	1	3	3	2	3
3	The concept of Complex Number is used in the field of Computer Science. It is used in coding and programming	3	2	1	2	3	2	3	1	-	2	1	-	1
4	Coordinate Geometry has application in the field of construction. The sketch of a building is pure geometry. It is also used for finding the distance between places and in geography also it has many applications. In Astrophysics to find the distance between planets.	3	3	3	3	3	3	3	3	3	3	3	2	2
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Applied Physics (A)					DPH-101			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure	1	-	-	-	-	-	-	-	-	-	2	-	-
2	In this student learn investigate the effect of gravity and friction on the motion of machines (mechanical) instrument etc.	3	-	-	-	-	-	-	-	-	-	1	-	-
3	Students learn to introduce and explain fundamental of fluids mechanics which is used in the application of aerodynamics, hydraulics, marine, dynamic etc.	-	-	-	-	-	-	-	-	-	-	-	-	-
4	students learn energy transfer to one gear to another gear in machine and instrument etc.	-	-	-	-	-	-	-	-	-	-	-	-	-
5	students learn to analyses some real problem and to formulate the condition of theory of elasticity and application.	-	-	-	3	3	-	-	-	-	3	-	-	-
6	The student learns to formulate the 1st law of thermodynamics for a close system and arrangement the change in energy in the closed system via heat and work transfer.	-	-	-	-	3	-	-	-	-	3	-	-	-

7	Distinguish heat transfer by conduction, convection and radiation and calculate the amount of heat energy transfer.	-	-	-	3	-	-	-	-	-	3	-	-	-
8	Calculate the change in moving boundary work, electrical work shop in close system.	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Student learns about different thermal process.	-	-	-	-	-	-	-	-	-	-	-	-	-

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Applied Chemistry (A)					DCH-101			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Basic concept of atomic structure, Matter wave concept determination of quantum numbers, periodicity of elements in periodic table	3	1	-	-	-	-	-	-	3	1	-	-	-
2	Idea of various types of chemical bonding, VSEPR theory, Valence bond theory and Molecular orbital theory	3	2	-	1	-	-	-	-	-	-	-	-	-
3	Concept of acid base theory, pH scale, buffer solution, indicators, common ion effect, electrode potential, Galvanic cell and electrolytic cell, applications of electrochemical series, corrosion and its prevention	3	-	-	2	1	-	-	-	2	2	-	-	-
4	Rate of reaction, rate constant, molecularity and order of reaction; Understanding of catalyst and their use in various types of reactions; different types of solid and band theory of solids; types of crystal and imperfection of crystal	3	2	-	2	1	-	-	-	-	1	1	-	-
5	Understanding of soft and hard water; types of hardness present in water; analysis of water hardness and their softening by using Soda-Lime, Zeolite and Ion exchange method; disadvantage of hard water in different industry; disinfection of water: Municipality waste water treatment	3	-	-	1	2	-	-	-	2	2	-	-	-

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Technical Drawing -I					DAR-101		Diploma in Architecture					1		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Students shall be familiarized with a range of techniques of expression beginning with manual drawing.	1	3	-	-	-	2	1	-	-	-	-	-	-
2	They will learn drafting, lettering and rendering techniques	-	3	-	-	-	3	-	-	-	-	-	-	-
3	They will learn about the differences between 2D & 3D objects.	-	3	-	-	-	3	-	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Building Material					DAR-102			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Identify and characterize building materials	-	-	-	3	-	2	-	-	-	3	-	2	-
2	Understand the manufacturing process of bricks and cement	-	-	-	3	-	2	-	-	-	3	-	2	-
3	Identify the methods for preservation of timber and metals.	-	-	-	3	-	2	-	-	-	3	-	2	-
4	Learn the basic theory about important building material.	-	-	-	3	-	2	-	-	-	3	-	2	-

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Electrical Engineering					DAR-103			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	**Conceptualize** fundamental laws of DC network and grouping of electrical elements.	2	2	-	-	-	-	-	-	-	-	-	-	1
2	To analyze the circuit element by giving an alternating input for lagging and leading behavior of current and voltage	1		-	-	-	-	-	-	-	-	-	-	-
3	To impart the basic concept of active reactive power and voltage current relationship in star delta connection of electrical machines	1	1	-	-	-	-	-	-	-	-	-	-	-
4	Learn to Calculate the load and decide the ratings of electrical equipment and accessories and also decide the number of light and power circuit will be required for Domestic wiring circuit according to IS specification.	1	-	-	-	-	-	2	-	-	1	2	2	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Applied Chemistry Lab					DCH-151			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Analysis of acid and basic radical of inorganic mixture	3	-	-	1	1	-	-	-	2	2	-	-	-
2	Determination of chloride content by Mohr's method in supplied water	3	-	-	2	2	-	-	-	-	1	-	-	-
3	Testing of total hardness of water sample by EDTA titration method in terms of $CaCO_3$	3	-	-	2	1	-	-	-	2	2	-	-	-
4	Analysis of temporary hardness in water sample through O'Hener's method.	3	-	-	2	1	-	-	-	2	2	-	-	-
5	Dissolve oxygen analysis in water sample	3	-	-	-	-	-	-	2	2	1	-	-	-
6	Analysis of strength of HCl solution through NaOH solution by using pH meter	3	-	-	1	2	-	-	-	2	2	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Building Material Lab					DAR-152			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Able to design and test the materials either in the laboratory or in the field before their actual use at the site.	2	-	-	-	-	-	-	-	-	3	2	2	-
2	Able to Impart the knowledge about the characteristics, sources and defects in various materials used for construction purposes.	2	-	-	-	-	-	-	-	-	3	2	2	-
3	Able to attain the knowledge of different components of building, their classification, materials and methods of construction and causes of their failures.	2	-	-	-	-	-	-	-	-	3	2	2	-
4	To examine and identify different types of stones and aggregates i.e. the Visual identification of these materials' specimen present in the Lab.	2	-	-	-	-	-	-	-	-	3	2	2	-
5	Identification of timbers i.e. the visual identification of specimen of Exogenous Trees.	2	-	-	-	-	-	-	-	-	3	2	-	-
6	To determine the Strength of various Engineering Materials and Conduct the Field Test of Cement, Lime and Bricks.	2	-	-	-	-	-	-	-	-	3	-	-	-

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping													
Subject Name				Subject Code			Branch					Year	
Electrical Engineering Lab				DAR-153			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome											
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Staircase lighting system using two-way switch.	-	-	-	1	-	-	-	-	-	-	-	-	-
2	Study of corridor lighting system.	-	-	-	1	-	-	-	-	-	-	-	-	-
3	Practice of making T and mesh joint.	-	-	-	2	-	-	-	-	-	-	-	-	-
4	Testing of open circuit and short circuit faults in electrical installations by Megger.	-	-	-	2	-	-	-	-	-	-	-	-	-

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Computer Application Lab					DCS-151			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Students become familiar with the basic fundamentals and concepts of Computer	2	-	-	-	-	-	-	-	-	-	2	-	1
2	Practical knowledge of the MS Office package, viz. MS Word, MS Excel and MS PowerPoint.	2	-	-	-	-	-	-	-	-	-	-	-	1
3	Students are trained with the basic concepts of the programming language.	1	-	-	-	-	-	-	-	-	-	-	1	-
4	The course is designed to provide complete knowledge of C language.	1	-	-	-	-	-	-	-	-	-	-	1	-
5	Students will be able to develop logics which will help them to create basic programs and applications in C.	1	-	-	-	-	-	-	-	-	-	-	1	-
6	By learning the basic programming constructs, they can easily switch to any other language in future.	1	-	-	-	-	-	-	-	-	-	-	1	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Applied Mathmatics-1(B)					DMA-201		Diploma in Architecture					1		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Here students are getting the knowledge of Graphs, continuity, and differentiation by which they will be able to find areas of any surface.	2	3	2	2	1	1	2	-	-	3	3	-	-
2	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.	3	3	3	2	2	1	2	-	-	3	3	-	-
3	Definite and Indefinite integral knowledge makes students wide in solving problems related to big summations and areas related problems. Regarding applications students will be able to solve problems like 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 will be easily solved.	2	3	2	2	1	1	2	-	-	3	3	-	-
4	Applications of Integration will lead students to get a good knowledge of finding areas, volume etc.	2	3	2	2	1	1	2	-	-	3	3	-	-
5	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.	2	3	2	2	1	1	2	-	-	3	3	-	2
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Applied Physics (B)					DPH-201			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Students learn to convert one unit to different unit and they use conversation factor which is numerically quantity that we multiply or divide to the quantity. Student learns accuracy of the lab instrument with the help of significant figure	1	-	-	-	-	-	-	-	-	-	-	-	-
2	Student learn to analysis to effect of building acoustic condition	2	-	-	-	3	-	-	-	3	1	2	-	-
3	Student learn about application of ultrasound in various field like SONAR, medical and research work and sound signal etc.	3	-	-	2	3	-	-	-	3	1	-	-	-
4	The student learns to introduce and overview of optical fiber and process of transmission of signal and application of various field.	3	-	-	2	2	-	-	-	-	2	-	-	-
5	Student learns to investigate broken telegraph wire with the help of post office box.	-	-	-	2	-	-	-	-	-	2	-	-	-
6	Student learn to simplify the complicated circuit by using Kirchhoff's law	-	-	-	2	-	-	-	-	-	-	-	-	-
7	Student will be able to distinguish among various student in the basis of magnetic properties like Dia., Para and ferromagnetic and build the temporary and permanent magnet	3	-	-		3	-	-	-	-	3	3	-	-

8	Student learns about LASER and various applications in various fields like medical etc.	2	-	-	3	-	-	-	-	-	3	-	-	-
9	Student learns about basic electronics which promote to learn the characteristics of transistor (amplifier).	-	-	-	-	-	-	-	-	-	-	-	-	-
10	X-ray and various properties in various field like medical engineering and research center etc.	2	-	-	3	1	-	-	-	-	1	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Applied Chemistry (B)					DCH-201			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Classification and properties of good fuels, calorific value and its determination, refining of petroleum, Benzol, power alcohol, Knocking of engine and anti-knocking agents used to reduce knocking, octane and cetane number, Bergius and Fischer Tropsch's method for hydrogenation of coal, Preparation and uses of Coal gas , oil gas, water gas biogas, LPG and CNG	3	-	-	2	1	-	-	-	-	1	-	-	-
2	Concept of Colloidal state of matters, preparation of colloids by physical and chemical method, protective colloids, properties of colloids: Brownian movement, Tyndal effect, Electrophoresis and Coagulation. Preparation of emulsion and its application; Lubricants and their types; Function, mechanism and its application in different industry; additive compounds in lubricant	3	-	-	1	2	-	-	-	-	2	-	-	-
3	IUPAC nomenclature of organic compounds, preparation and uses of ethane, ethane, ethyne, benzene and toluene.	3	-	-	-	-	-	-	-	-	-	2	-	-
4	Concept of electrophiles and nucleophiles, reaction intermediates: free radical, carbocation, carbanion mechanism of electrophilic and nucleophilic substitution reaction, addition, and	3	-	-	-	-	-	-	-	-	-	-	-	-

	elimination reactions.													
5	Polymers, synthesis properties and uses of addition and condensation polymers, biopolymers, manufacturing of soap, detergents, Preparation and uses of explosives: TNT, RDX, Dynamite, Synthesis and use of paint and varnish.	3	-	-	2	1	-	-	-	-	2	2	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Technical Drawing –II					DAR-201		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
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.	1	3	-	-	-	2	1	-	-	-	-	-	-
2	To develop perception and presentation of architectural forms and buildings.	-	3	-	-	-	3	-	-	-	-	-	-	-
3	Student shall develop understanding the range of techniques of expression beginning with manual drawing.	-	3	-	-	-	3	-	-	-	-	-	-	-
4	Familiarization with drafting tools and accessories.	-	2	-	-	-	1	-	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Fundamentals of Architecture					DAR-202		Diploma in Architecture					1		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Students will be able to learn about the evolution of architecture from ancient to modern world.	-	-	-	-	-	-	1	-	3	-	-	-	-
2	Students will be able to learn about the basic design and basic understanding of form, order and space in architecture.	2	3	-	-	-	-	2	-	-	-	-	-	-
3	They will also learn about human activities, space required for activities.	-	1	-	-	1	-	2	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Professional Communication					DPC-201			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Introduction of the concept of communication, types skills, modern tools, etc..	2	3	1	-	1	-	-	-	-	1	-	-	-
2	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.	3	1	-	-	2	-	-	-	-	3	-	-	-
3	The CO of this unit is to control sentence-level error (grammar, punctuation, and spelling).	1	-	-	3	-	-	-	-	-	3	2	-	-
4	Its outcome is to employ techniques of active reading, critical reading, and informal reading response for inquiry, learning, and thinking.	-	-	1	2	3	-	-	-	-	-	-	-	-
5	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.	1	2	-	-	-	-	-	-	-	3	2	-	-
6	The conclusion of this subject is to increase the students' English communication skills by: Improving fluency through regular practice and speaking drills.	-	-	-	-	-	-	-	2	2	1	-	-	-

	Understanding of basic grammar structures - like nouns, verbs and adjectives - through class reading and speaking tasks.													

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Applied Physics Lab					DPH-251			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	To gain knowledge by applying the experiment methods to correlate with the physics theory.	1	-	-	-	-	-	-	-	-	2	-	-	-
2	Experience and understand basic physical fundamentals and the key vocabulary to describe them: basic Electronics & Electrical, kinematics, dynamics, work and energy, gravitation, fluids.	-	-	-	1	-	-	-	-	-	2	-	-	-
3	Develop skills in observation, interpretation, reasoning, synthesis, generalizing, predicting, and questioning as a way to learn new knowledge.	-	-	-	-	3	3	-	-	-	2	-	-	-
4	Apply conceptual understanding of the physics to general real-world situations.	2	-	-	-	-	-	-	-	-	3	-	-	-

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Basic Computer Aided Design Lab					DCAD-251		Diploma in Architecture					1		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Learn basic auto Cad skills.	-	**3**	**3**	-	**2**	-	**2**	**1**	-	**1**	-	**1**	-
2	Students learn how to operate Auto Cad and transform sketches and technical data into electronic drawings.	**2**	**3**	**3**	-	**3**	**1**	**2**	-	**1**	**1**	-	**1**	-
3	Understand modeling of curves, surfaces and solids	-	**2**	**1**	-	**1**	**1**	**1**	-	-	**1**	-	-	-
4	Transform, manipulate the object and understand rapid prototyping and tooling concept in any real-life application.	-	**1**	-	-	**1**	-	-	-	-	-	**1**	-	**1**
5	Understand FEM based problems.	**2**	**1**	-	-	**1**	-	-	-	-	-	**2**	-	-

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Workshop Practice					DWS-251			Diploma in Architecture					1	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	To acquire skills in basic engineering practice.	2	2	2	1	2	-	1	-	-	1	-	1	-
2	To identify the hand tools and instruments.	-	-	-	-	1	-	-	-	-	-	-	-	-
3	To acquire measuring skills.	1	1	1	1	2	-	1	-	-	1	-	-	-
4	To acquire practical skills in the trades.	2	1	1	1	1	-	2	1	-	2	-	1	1
5	To provides the knowledge of job materials in various shops.	1	-	-	-	1	-	1	-	-	-	-	-	-
6	To provides the knowledge of core technical subjects for making and working of any type of project.	2	1	-	-	1	1	1	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code			Branch					Year		
Surveying				DAR-301			Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Handle various survey instruments for a particular survey work.	1	2	2	-	-	-	1	-	-	1	-	-	1
2	Carry out various civil engineering survey works.	1		2	-	-	-	1	-	-	1	-	-	-
3	Collect and analyses survey data for preparing drawings and maps.	1	2	-	-	-	-	1	-	-	-	-	-	1
4	Apply checks for errors elimination.	1	2	2	-	-	-	1	-	-	1	-	-	1

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Building Services - I					DAR-302		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The course aims at elementary building services of Water supply, Drainage, Electrical and Lighting.	-	-	-	3	2	-	2	-	1	1	-	1	2
2	Students will also be aware of simple drainage systems for small buildings, the incorporation of Electrical and Lighting Services in building design.	-	-	-	3	3	-	2	-	2	-	-	-	2
3	The students are to know, how to prepare layout and details for design project in architectural design.	-	2	-	-	-	3	2	-	-	2	-	1	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Design with Climate					DAR-303		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	This subject enlightens the students to the processes by which building and entire habitats can be designed to respond to nature, with climate as the basic parameter of design.	1	-	-	-	3	-	-	-	-	-	-	-	2
2	Enable students to understand design strategies for different climatic regions.	-	-	-	-	3	-	2	-	-	-	-	-	3
3	Also Familiarizing students with modern techniques to analyse climatic parameters and design buildings accordingly.	-	-	-	-	3	-	2	-	-	1	-	-	2
4	Introduction to elementary principles of bioclimatic studies with respect to buildings and human comfort.	-	-	-	2	3	-	-	-	-	-	-	-	3
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code		Branch						Year		
Architecture Graphics - I				DAR-304		Diploma in Architecture						2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Architectural Graphics focuses on the techniques, methodologies, and graphic tools used in visualizing, creating and conveying architectural ideas.	-	2	-	-	-	3	-	-	-	-	-	-	-
2	Explains the different basic fundamentals like elements, principle and etc. that build's the very foundation of an Architecture design.	-	3	-	1	-	3	-	-	-	-	-	-	-
3	It focuses on to develop the perception and presentation of architectural forms and buildings.	-	-	-	-	-	3	-	-	-	-	-	-	-
4	Introduces the concept and skills of presentation of any Architecture design.	-	-	-	-	-	3	-	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Strength of Materials					DAR-305		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Analyze indeterminate structures like fixed and continuous beams of simple structures.	-	-	-	-	-	-	2	-	-	3	1	-	1
2	Analyze shear force and bending moments for different types of beams for the purpose of designing.	-	-	-	-	-	-	2	-	-	3	2	-	1
3	Study of different types of stresses and their variation along the length of beam.	-	-	-	-	-	-	3	-	-	2	3	-	2
4	Analyze columns and struts of simple structures and concept of direct & bending stresses of simple structures.	-	-	-	-	-	-	1	-	-	2	1	-	3

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Architecture Design -I					DAR-306		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The subject focuses on the basic design and basic understanding of form, order and space in architecture.	-	3	-	-	-	-	1	-	-	-	-	-	-
2	Enable students to learn about the human activities and space required for activities and also Understanding design as function.	-	2	-	-	2	-	1	-	-	-	-	-	-
3	They will learn about the differences between 2D & 3D objects.	-	3	-	-	-	3	-	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code			Branch					Year	
Survey Lab					DAR-351			Diploma in Architecture					2	
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Identify and characterize building materials	-	-	-	3	-	2	-	-	-	3	-	2	-
2	Understand the manufacturing process of bricks and cement	-	-	-	3	-	2	-	-	-	3	-	2	-
3	Identify the methods for preservation of timber and metals.	-	-	-	3	-	2	-	-	-	3	-	2	-
4	Learn the basic theory about important building material.	-	-	-	3	-	2	-	-	-	3	-	2	-

*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code		Branch						Year		
Model Workshop				DAR-356		Diploma in Architecture						2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Student will be able to handle various material, adhesives for model making.	2	-	-	-	-	3	-	-	-	-	-	-	-
2	They will also be able to learn use of different types of colors.	-	-	-	-	-	3	-	-	-	-	-	-	-
3	They will learn to differentiate between different types of models like site models, block models and finished presentation models.	-	3	-	-	-	2	-	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code			Branch					Year		
Building Services - II				DAR-401			Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The subject aims at Understanding complex services in multi-storied buildings. They will understand the architectural content of services in buildings.	-	-	-	3	2	-	2	-	-	3	-	1	2
2	They will understand advanced building services pertaining to natural and mechanical ventilation, and their application to build forms.	-	-	-	3	3	-	2	-	1	3	-	-	-
3	To make students aware about Fire- fighting methods, rules, regulations and equipment.	-	-	-	3	-	-	2	-	-	-	-	-	2
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
History of Architecture					DAR- DAR-402		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The emphasis of this subject is to highlight the salient features of a style, awareness about the planning, construction, function and aesthetics of historical buildings.	-	-	-	-	2	-	-	-	-	3	-	-	-
2	They will appreciation of architectural style as a product of the time, place and culture in the western world.	-	-	-	-	2	-	-	-	-	3	-	-	2
3	Introduction to the architecture of the ancient world and understanding architecture of periods in terms of space, form and structure.	-	2	-	-	-	-	-	-	-	3	-	-	-
4	Familiarizing with typical examples of building type.	-	-	-	-	-	-	-	-	-	3	-	-	1
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Building Construction – I					DAR-403		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	To develop understanding of Construction Principles and theories	-	-	-	-	2	-	-	-	-	3	2	-	-
2	To introduce and familiarize student with construction method and techniques	-	-	-	-	-	-	-	-	-	3	1	-	-
3	Covering in brief Topics in Building Construction like Foundations, D.P.C, Bricks and Stone masonry, Arches and lentils, Doors and Windows, and Roof and Roof covering.	-	-	-	-	1	-	-	-	-	3	2	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

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DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Architecture Graphics – II					DAR-404		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	It further develops the techniques, methodologies, and graphic tools used in visualizing, creating and conveying architectural ideas and concepts.	-	3	-	-	-	3	-	-	-	-	-	-	-
2	It thoroughly addresses the skills to develop different views of an Architectural drawing like isometric view, and one-point, two-point and three-point perspective.	-	3	-	-	-	3	-	-	-	-	-	-	-
3	Introduction to the Principles of shades and shadows	-	1	-	-	-	3	-	-	-	-	-	-	-
4	Drawing shades and shadows of lines, planes, solids and architectural building elements	-	-	-	-	-	3	-	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Environmental Studies					DAR-405		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
1	Understand the natural environment and its relationships with human activities.	2	-	2	3	-	-	-	-	-	-	-	2	-
2	Natural environment relationships with human activities.	2	-	2	3	-	-	-	-	-	-	-	2	-
3	Characterize and analyze human impacts on the environment	2	-	2	3	-	-	-	-	-	-	-	2	-
4	Integrate facts, concepts, and methods from multiple disciplines and apply to environmental problems.	2	-	2	3	-	-	-	-	-	-	-	2	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Architecture Design – II					DAR-406		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Making student learn about the art of collecting data and to carry out analysis for the process of evolving design and individuality of approach.	-	1	3	3	2	1	3	1	2	-	3	3	3
2	Students will understand about site planning: organization, scale, hierarchy, orientation and climate.	-	-	-	2	3	1	3	1	3	3	1	1	2
3	Students will understand about the layout and services of large public buildings with specialized services.	-	1	-	3	2	-	3	1	1	2	2	2	1
4	Students will Understand design as a function of specific agenda of repetitive units, site conditions, orientation and climate.	-	2	3	3	3	-	3	1	3	3	3	2	2
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping													
Subject Name				Subject Code		Branch					Year		
AutoCAD lab.				DAR-451		Diploma in Architecture					2		
S.no.	Course Outcome Description	Program Outcome											
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Students will become familiar with office practice and standards.	-	-	-	-	-	2	3	-	-	2	-	-	2
2	Students will become familiar with Auto Cad two dimensional drawings.	-	3	-	-	-	3	3	-	-	2	-	-	2
3	Students can make accurate and precise drawings like plan, section and elevation of a building.	-	2	3	-	-	2	3	-	-	3	-	-	1
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code		Branch					Year			
Construction Technique Lab.				DAR-456		Diploma in Architecture					2			
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Construction lab is the onsite implementation of the theories learned in building construction, which further assures the understanding of construction.	-	-	-	-	-	-	-	-	-	2	2	-	-
2	To familiarize them with the different building material and their effective role in different stages of building construction.	-	-	-	-	-	-	-	-	-	3	1	-	-
3	Also, makes them aware of the errors that appear while implementation of those theories learned in building construction.	-	-	-	-	-	-	-	-	-	1	1	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Estimation and Costing - I					DAR-501		Diploma in Architecture					3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Introduction and importance of Estimation in building construction and Architecture.	-	-	-	-	-	-	-	-	-	-	-	3	-
2	To aware student regarding factors effecting the cost of Building.	-	-	-	2	-	-	2	-	-	2	-	3	-
3	Method of taking out quantities of materials used at different stages in Building Construction.	3	-	-	-	-	-	-	-	-	1	-	3	-
4	The analysis of rates of the material used in Construction and method of their organized presentation.	1	-	-	-	2	-	-	-	-	-	-	3	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Building Construction – II					DAR-502		Diploma in Architecture					3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	To further enhance understanding of Construction Principles and theories.	-	2	-	-	-	-	3	1	-	-	-	-	-
2	To introduce and familiarize student with construction method and techniques addressing additional topics in Building construction.	-	-	-	1	-	-	3	2	-	-	-	-	-
3	Covering in brief Topics in Building Construction like Floors, Roofs, Scaffolding and Framework, Partition and Wall Paneling, and Construction Equipment's.	-	-	-	1	-	-	3	2	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Interior Design					DAR-503		Diploma in Architecture					3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	A brief introduction to basic principle of Interior design with also addressing its functional and psychological concepts.	-	-	-	2	-	-	3	-	-	-	-	-	-
2	The conversion of space, facilities and services allocated in a particular Design are made into functionally usable and livable spaces.	-	-	-	-	-	-	3	2	-	-	-	-	-
3	Different material and their functional use in Interior	-	-	-	-	1	-	3	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Working Drawing					DAR-504		Diploma in Architecture					3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
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.	-	3	1	2	-	3	-	-	-	2	-	-	-
2	The subjects should also focus on developing design abilities by applying basic principles.	-	2	-	1	-	2	-	-	-	2	-	-	-
3	Construction and choosing appropriate materials and techniques.	-	-	-	1	2	2	-	-	-	3	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code		Branch						Year		
Structure Design				DAR-505		Diploma in Architecture						3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The subject aims at clarify the basic principles underlying the inventions of various structural ideas with a view to bridge the gap between architectural theory and structural reality.	1	-	1	-	-	-	-	-	-	-	-	3	-
2	Also, to understand the relationship between architectural structure and architectural form with a view to stimulate the faculty of conceiving and developing new systems.	2	-	-	-	-	-	-	-	2	-	-	3	1
3	They will learn basic differences and importance of architect and structural engineer for each other.	2	-	-	-	-	-	-	2	1	-	-	3	1
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping													
Subject Name				Subject Code		Branch					Year		
Building Contract				DAR-506		Diploma in Architecture					3		
S.no.	Course Outcome Description	Program Outcome											
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The subject aims to acquaint the students with most of the general aspects of tender and contracts in very deep detail.	-	-	-	-	-	-	-	2	-	-	-	-	2
2	Subject will get an introduction to different types of tenders and contracts.	-	-	-	-	-	-	-	2	-	-	-	-	1
3	Subject will aim on the different responsibilities of contractors, engineers, architects, etc.	-	-	-	-	-	-	2	3	-	-	-	1	2
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code		Branch						Year		
Architecture Design – III				DAR-507		Diploma in Architecture						3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	Making student learn about the art of collecting data and to carry out analysis for the process of evolving design and individuality of approach.	-	1	3	3	2	1	3	1	2	-	3	3	3
2	Students will understand about site planning: organization, scale, hierarchy, orientation and climate.	-	-	-	2	3	1	3	1	3	3	1	1	2
3	Students will understand about the layout and services of large public buildings with specialized services.	-	1	-	3	2	-	3	1	1	2	2	2	1
4	Students will Understand design as a function of specific agenda of repetitive units, site conditions, orientation and climate.	-	2	3	3	3	-	3	1	3	3	3	2	2
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code		Branch						Year		
Town Planning				DAR-508		Diploma in Architecture						3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The subject focuses on generating an understanding about the development of civilization and its architectural implications.	-	-	2	1	3	-	-	-	3	1	-	-	2
2	Learning about different types of city planning.	-	-	2	3	1	-	1	-	3	1	-	-	2
3	Studying Town planning helps students to relate the architectural projects in context of planning.	-	-	1	2	3	-	1	-	3	2	-	-	2
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code			Branch					Year		
Field Exposure				DAR-557			Diploma in Architecture					3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The aim of the 'Practical Training' is to enable the students to gain the kind and range of practical experience which will prepare them for their likely responsibilities, immediately after qualifying D. Arch. Course.	-	1	-	2	3	-	2	-	-	3	1	2	1
2	Training bridges the gap between the academia and the industry and facilitates to enhance their creative thinking.	-	1	-	1	1	-	2	3	1	3	1	3	1
3	It provides an opportunity for students to undergo professional work in a real-life work environment through experience grounded in hard work and application of theoretical knowledge.	-	1	-	3	3	-	2	1	1	3	1	3	1
4	It offers an opening to obtain social skills through constant communication with professionals within and outside organizations	-	1	-	-	2	-	2	3	-	3	1	2	1
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Estimation and Costing – II					DAR-601		Diploma in Architecture					3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	To initiate the students into theory and practice of estimating and quantity surveying.	-	-	-	-	-	-	-	1	-	-	-	3	-
2	To inculcate awareness regarding factors effecting cost of buildings.	-	-	-	2	2	-	-	2	-	-	-	3	-
3	Preparing Detail estimate with calculation, including P.H.E. items and R.C.C. works	3	-	-	-	-	-	-	-	-	2	-	3	-
4	A brief introduction to Valuation	-	-	-	-	1	-	-	2	-	-	-	3	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Modern trends in Architecture					DAR-602		Diploma in Architecture					3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The subject aims at understanding the development in the Western Architecture.	1	-	-	-	1	-	-	-	-	2	-	-	3
2	They will learn from Renaissance to the Contemporary with emphasis on the underlying parameters, philosophy, intentions.	-	2	-	-	2	-	2	-	1	3	1	-	2
3	And also, about expressions of associated periods/ movements as a response to the context of time, location and aspirations.	-	-	-	2	-	-	-	3	2	2	2	-	1
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name					Subject Code		Branch					Year		
Landscape Design					DAR-603		Diploma in Architecture					3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The subject focuses on reorganization of landforms, plantation water bodies and structures as major landscape elements.	-	3	-	-	1	-	-	-	-	-	-	-	3
2	They will learn about the various principles and elements of landscape design.	-	3	-	-	2	-	-	-	-	-	-	-	-
3	And also helps in understanding the various landscape styles and techniques.	-	2	-	-	3	-	1	-	-	-	-	-	2
4	They will learn about different trees, shrubs and grasses.	-	-	-	-	1	-	-	-	-	-	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DIPLOMA IN ARCHITECTURE

COURSE OUTCOME to PROGRAM OUTCOME MAPPING

(CO-PO MAPPING)

Course Outcome - Program Outcome (CO-PO) Outcome Mapping														
Subject Name				Subject Code		Branch						Year		
Arch. Project				DAR-604		Diploma in Architecture						3		
S.no.	Course Outcome Description	Program Outcome												
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PO-13
1	The subjects aim at preparing a student to independently handle and present all aspects of an architectural design from its evolution to final solution in totality.	1	2	3	3	3	2	3	2	3	2	3	1	3
2	Students will be able to understand the importance of the evolutionary stages of a design process	1	-	1	2	1	-	3	2	1	3	1	1	3
3	They will learn about Various techniques required for a successful presentation of an architectural design.	-	3	-	1	-	3	-	-	-	2	-	-	-
*Note Rating Criteria: 3 - strong contribution, 2 - average contribution, and 1 - low contribution														

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
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S. No.	PSOs Of CSE
PSO-1	To inculcate the ability to understand the evolutionary changes in computing and to apply standard practices and strategies in software project development using open-ended programming environments.
PSO-2	To develop the Capability of applying knowledge of mathematics, basic sciences, and engineering to solve Computer Science & Engineering problems.
PSO-3	To deliver a quality product for the academic and professional success.
PSO-4	To develop the ability to face real world problems and to meet the challenges of the future.
PSO-5	To train students in the use of relevant computer-based tools and programming languages.
	PEOs Of CSE
PEO-1	**T**o Develop ability to analysis of real life problems and requirements of software, understand technical specification, operation, design and provide appropriate solutions which are technically sound, economically feasible and reliable.
PEO-2	Our students will have required professional and technical skills i.e. high ethical standards, effective oral & written communication skills, leadership skills and working as a member of a team for solving different technical and non technical problems.
PEO-3	Our students will acquire knowledge with practical understanding in applied sciences, technical skills in the field of computer science. They are likely to move in industry as well as pursue higher studies.
	Programme Outcomes (POs)
PO-1	**Engineering knowledge:** Apply the knowledge of applied sciences, Engineering fundamentals, and an engineering specialization to the solution of complex programming problems.
PO-2	**Computer techniques:** An ability to use techniques, skills and modern hardware devices and software tools which are adopted in Computer Engineering practices. An ability to design and develop the modules during the development of software & having the knowledge of hardware interface of varying complexity.
PO-3	**Impact of computing:** An ability to understand and analyze the local and global impact of computing on individual, organizations and society. It also deals with the use of internet and its services for effective implementation of computing through wired or wireless networking. The advancement in computing also enhances the security issues as the vulnerability of data is a major concern which is to be dealt with effectively.

PO-4	**Design and development:** Design solutions for complex programming problems and design system components or applications that meet the specified needs of end users with appropriate consideration of all the SDLC phases involved in software designing by using various tools and plateforms required. It deals with the designing of algorithms and various protocols required for addressing various complex problems.
PO-5	**Use of Modern tools:** Create, select, and apply appropriate IT tools and techniques, various multimedia tools, resources, in addition to modern engineering practices. It also includes the conceptual knowledge of artificial intelligence and neural network, and its use in the prediction and modeling to complex engineering activities with an understanding of its limitations.
PO-6	**E-Business and its impact on society:** To promote online business and commercial activities through the computer network with the help of web scripting language as well as multimedia tools. Also apply reasoning and managerial skills and handling the responsibilities relevant to the professional engineering practices by developing and managing relationship with the customers.
PO-7	**Environment and sustainability:** Understand the impact of the professional engineering practices on society and environment, also demonstrating the knowledge and need of sustainable development in context to public health and safety, by keeping in view, the cultural, societal, and environmental considerations.
PO-8	**Ethics and Communication:** Apply ethical principles and commit to professional ethics and ability to communicate effectively on Computer Engineering related activities with Engineering community and society through the various networking devices with help of wireless computing tools.
PO-9	**Graphics and animation:** Enhancing the technical knowledge in the field of computer graphics, animations and interactive multimedia authoring tools to develop various static and dynamic web based applications by using different scripting languages viz. HTML, CSS, JS etc. on various frameworks and platforms.
PO-10	**Programming and technical skills:** Enhancing the programming skills by imparting the conceptual knowledge of both high and low level programming languages and developing their technical skills by providing practical knowledge of using programming languages such as C, OOPS, C++,data structure, JAVA ,C#.Net etc
PO-11	**Project management:** Demonstrate knowledge and understanding of the principles, concepts and techniques of computer science & engineering with the programming skills and implement them to one's own work, as a member and leader in a team, to design, develop and manage projects in respective discipline.

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CO-PO MAPPING

	CO	Applied Mathematics-I(B) DMA-101										
S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	Arithmetic Progression and Geometric Progression can be applied in real life by analysing a certain pattern that we see in our daily life.	1	2	1	-	-	-	-	-	3	-	-
CO2	.Trigonometry is widely used in several fields. Some of it's uses are Measuring heights and distances, in construction and architecture, flight engineering, marine biology, application of Physics, electrical engineering, manufacturing industry, gaming industry.	3	3	2	1	-	-	-	-	-	-	-
CO3	The concept of Complex Number is used in the field of Computer Science. It is also used in coding and programming.	3	3	3	-	-	1	-	1	2	-	2
CO4	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	3	3	1	2	-	-	2	-	3	-	-
CO5	Three dimensional geometry is used in various fields like in computer graphics, biotechnology and medical sciences and in different projects also.	3	3	3	3	-	1	1	2	3	-	2

S. No	Fundamentals of Information Technology(DCS-101)										
	COURSE OUTCOMES	**CO-PO Mapping**									
	CO DESCRIPTION	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students become familiar with Information technology and its terminologies.	1	3	3								
CO2	Knowledge of computer, its types, memory, other hardware and software		3	3		2						
CO3	Knowledge of basic troubleshooting techniques .		3			1					1	
CO4	Develop understanding of different data representation standards, numbers sytems and their conversions.	2		1	1							
CO5	Introduced with different types of networks and various advanced input output and storage devices.		2	3		2						
CO6	Introduced with various mobile data communication technologies.								1			
CO7	Knowledge of various emerging trends in the field of Information Technology.		2	3		2			1			

	Computer Application Lab (DCS-151)										
	COURSE OUTCOMES	**CO-PO Mapping**									
S. No	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students become familiar with the basic fundamentals and concepts of Computer	1	3	2								
CO2	Practical knowledge of the MS Office package, viz. MS Word, MS Excel and MS PowerPoint.	1	2	2							1	
CO3	Students are trained with the basic concepts of the programming language.				1						2	
CO4	The course is designed to provide complete knowledge of C language.				2						3	
CO5	Students will be able to develop logics which will help them to create basic programs and applications in C.				2						3	2
CO6	By learning the basic programming constructs they can easily switch to any other language in future.				2						3	2

	CO	Applied Mathematics-I(B) DMA-201											
S. No	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Here students are getting the knowledge of Graphs, continuity, and differentiation by which they will be able to find areas of any surface.	3	3	3	2	-	-	-	-	3	-	-	-
CO2	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.	1	1	2	1	-	-	-	-	-	-	-	-
CO3	Definite and Indefinite integral knowledge makes students wide in solving problems related to big summations and areas related problems. Regarding applications students will be able to solve problems like 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 will be easily solved.	3	3	3	1	-	1	-	-	3	-	1	-
CO4	Applications of Integration will lead students to get a good knowledge of finding areas, volume etc	3	3	-	1	1	-	-	1	1	1	-	1
CO5	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.		3	2	1	-	-	2	1	3	-	2	-

	Programming in C and C++ (DCS-202)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO 1	Obtain knowledge of programming concepts and languages especially C language.	1	2	-	-	1	-	-	-	-	1	-
CO2	Illustrate the basic information of C programming likes Data Types, variables, input output functions, control statements etc.	3	2	-	2	1	-	-	-	-	1	-
CO3	Apply programming concepts and techniques to build the basic programs of C languages as well as develop the practical approach on programming.	1	1	-	3	1	-	-	-	-	3	1
CO4	Illustrate the other advance programming concepts like Array, Pointer, Union, Structure and Functions.	-	1	-	2	-	-	-	-	-	3	-
CO5	Illustrate the programming constructs and features of object oriented language, limitation of procedural language and structures of C++ program.	-	2	1	1	-	-	-	-	-	3	-
CO6	Provide knowledge of C programming from bottom and develop skill to build program and solve real world problems.	1	2	-	-	-	-	-	-	-	3	1

	Internet & Web Page Designing (DCS-203)										
	COURSE OUTCOMES	**CO-PO Mapping**									
S. No	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students become familiar with internet, its history, present scenario, applications and its relevant terminologies		3	3			1					
CO2	Knowledge of internet connectivity options and various internet protocols.		3	1			1					
CO3	Develop understanding of different services available on the internet and various threats associated with it.			3		1	1		1			
CO4	Knowledge of various types of networks and network topologies with different networking standards.		2	2		1						
CO5	Students become familiar with Email architecture, its services and protocols associated with it.		2	2								
CO6	Introduced with web languages and webpage designing concepts.						1		1	2	1	
CO7	Knowledge of HTML and the ability to develop simple web pages using HTML..									2	2	

	Programming in C and C++ (DCS-252)											
	COURSE OUTCOMES	**CO-PO Mapping**										
S. No	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students become familiar Algorithms.	3	2	-	2	1	-	-	-	-	1	-
CO2	Students become familiar Flowchart.	3	2	-	2	1	-	-	-	-	1	-
CO3	Develop practical approach using input and output function.	1	-	-	2	1	-	-	-	-	3	1
CO4	Develop practical approach using various c operators.	-	1	-	1	-	-	-	-	-	3	-
CO5	Knowledge of Control Statements like if, else if, switch case, While, Do While and For loop.	-	2	1	1	-	-	-	-	-	3	-
CO6	Develop practical approach using Array, Pointer, Structure and Union.	1	2	-	-	-	-	-	-	-	3	1

	Internet & Web Page Designing Lab(DCS-253)										
	COURSE OUTCOMES	**CO-PO Mapping**									
S. No	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students become familiar with the concept of Internet and how the internet and web functions in real world scenario.	1		3		1	1					
CO2	Knowledge of using Email and various services and functionalities associated with it.	1	1	3		2	2		1			
CO3	Students will learn the basics involved in publishing content on the world wide web.		1	2		1	3		1	2		
CO4	Introduced with the basics of hyper text markup language.			1		1				3	1	1
CO5	Students will be able to analyze a web page and identify its elements and attributes.			1		1				3	1	1
CO6	Develop the ability to create and design web pages using various attributes of html language.			1		1	2			3	2	1

	Operating System (DCS-302)											
	COURSE OUTCOMES	CO-PO Mapping										
S. No	CO DESCRIPTION	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO1	Students become familiar with Operating System, its evolution through different generations.		2	1								
CO2	Knowledge of different types of OS and its various functionalities.		2		1	1				1		
CO3	Students are familiarized with the concept of process and various CPU scheduling algorithms.		2		3					1	1	
CO4	Develop understanding of memory management by OS and the concept of virtual memory.		2	2						1		
CO5	Familiarized with the concept of paging and various Page replacement algorithms.		2		3							
CO6	Knowledge of disk structure and various disk scheduling algorithms.		2		3							
CO7	Develop the ability to compare between Linux, Unix and Windows OS.		2		1	2						

	Data structure through C(DCS-303)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO5**	**PO6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**
CO 1	To understand and analyze space and time complexity of various algorithms and implement various operations on arrays and linked list	3	1	-	-	-	-	-	-	-	2	1
CO2	Exhibit the skills of demonstrating use of linked list.	2	1	-	-	-	-	-	-	-	3	-
CO3	Illustrate the application of linear stack and queue.	2	1	-	-	-	-	-	-	-	3	-
CO4	Illustrate the application of tree and its types.	1	2	-	-	-	-	-	-	-	3	-
CO5	Demonstrate ability to exhibit knowledge of various searching and sorting techniques and identify potential benefits of each one over the other and propose appropriate technique to solve programming problems.	3	1	1	-	-	-	-	-	-	2	1
CO6	Illustrate the application of graph and its types and its types.	2	1	-	-	-	-	-	-	-	3	1

	Computer Hardware & Maintenance (DCS-304)										
	Course Outcomes	**CO-PO Mapping**									
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO 1	Introduction of physical components of computer like mother board, Bus and other peripheral devices.	1	2	-	-	3	-	-	-	2	-	-
CO2	Illustrate the basic information of Mouse, types of mouse and troubleshooting of mouse with knowledge of HDD encoding, recording and troubleshooting.	-	2	-	-	3	-	-	1	2	-	-
CO3	Identify the peripheral devices of memory like CD, DVD, Blue Ray Disk and Printer, Types of printer with troubleshooting.	-	2	-	-	3	-	-	-	2	-	-
CO4	Illustrate the Network devices and provide the basic concept or information of the network components.	-	3	-	-	1	2	-	3	-	-	-
CO5	Illustrate the external optical devices of computer memory with the characteristics of power supply and maintenance.	-	2	-	-	3	1	-	-	2	-	-
CO6	Provide knowledge of physical components of computer with various peripheral devices like input, output, and memory devices.	-	2	-	-	3	1	-	2	2	-	-

	Principle of Programming Language(DCS-305)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO 1	Analyze the designing criteria of different programming languages to choose appropriate language for implementation of real time applications	3	2	1	--	--	--	--	--	--	1	--
CO2	Identify appropriate primitive/user defined data types for increasing program efficiency	2	1	1	--	--	--	2	--	--	3	1
CO3	Apply sub program concepts to improve the readability of the program.	1	1	--	2	--	--	--	--	--	3	1
CO4	Analyze different object oriented programming features and to apply in developing efficient web programs with concurrent ability	1	1	--	--	--	2	--	--	1	3	1
CO5	Apply exception handling techniques to develop robust programs to sustain against all runtime exceptions	1	1	--	1	3	1	--	--	--	2	1
CO6	This course focuses on high-level programming languages and their formal semantics	1	--	--	2	2	--	--	--	--	3	2

	Operating System Lab (DCS-352)										
	COURSE OUTCOMES	CO-PO Mapping									
S#	CO DESCRIPTION	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO1	Students become familiar with Operating System, its main components and its functionalities.		2		1	1						
CO2	Students will learn the complete process involved in installation of an OS..		2			1					1	
CO3	Students are familiarized with the concept of process and various CPU scheduling algorithms.		1		3					1		
CO4	Familiarized with the concept of paging and various Page replacement algorithms.		1		3					1		
CO5	Learn the concept of disk scheduling and its various algorithms.		2		3					1		
CO6	Develop the ability to compare between Linux, Unix and Windows OS.		2		2	2				1	1	

	Data Structure using C lab(DCS-353)										
	Course Outcomes	CO-PO Mapping									
S No.	CO Descriptions	PO 1	PO 2	PO3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO10	PO11
CO 1	Solve computer hardware and software problems by using recursive, non-recursive or both techniques and to Apply asymptotic notations to evaluate the performance of an algorithm.	2	1	-	-	-	-	-	-	-	3	2
CO2	Familiarize and define the programming syntax and constructs of data structures to develop elegant, legible and reusable codes	3	2	-	-	1	-	-	-	-	2	2
CO3	Analyze and implement various searching techniques suitable to resolve data searching problems.	3	2	-	-	1	-	-	-	-	2	2
CO4	Demonstrate ability to exhibit knowledge of various sorting techniques and identify the potential benefits of each one over the other.	3	2	1	-	1	-	-	-	-	2	2
CO5	Illustrate about linear data structures like stacks and queues representations and operations and apply them to design and build C based real-time applications.	3	2	1	-	-	-	-	-	-	1	2
CO6	Create novel solutions for non-linear data structures by applying Trees and Graphs traversals.	2	1	1	-	-	-	-	-	-	3	2

	Computer Hardware & Maintenance (DCS-354)										
	Course Outcomes	CO-PO Mapping									
S No.	CO Descriptions	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO 1	Describe the role of Mother board in computer system and study the troubleshooting of mother board.	1	1	-	-	3	-	-	-	2	-	-
CO2	Study the functionality of Keyboard with illustrates the Keyboard decoder.	-	1	-	-	3	-	-	1	2	-	-
CO3	Study the video tools, adopter and controllers.	-	2	-	-	3	-	-	-	2	-	-
CO4	Illustrate the major storage devices like hard disk, CD, Floppy drive. Also study of multifunction of input and output controller.	-	1	-	-	1	2	-	3	-	-	-
CO5	Classification and their benefits of information security and different types of cyber laws. To understand the different security threats to E-commerce and Expert System.	-	2	-	-	3	2	-	-	2	-	-
CO6	Study the basic information of printer, Digital plotter with troubleshooting of Network and power supply.	-	2	-	-	3	1	-	2	2	-	-

	Object oriented programming with c++(DCS-401)											
	Course Outcomes	CO-PO Mapping										
S No.	CO Descriptions	PO 1	PO 2	P O3	PO 4	P O5	P O6	PO 7	PO 8	PO 9	PO1 0	PO1 1
CO 1	Use various programming constructs of object oriented language	2	1	2	1	-	-	-	-	-	3	1
CO2	Apply principles of object oriented programming to model/design real world problems.	2	1	2	1	-	-	-	-	-	3	1
CO3	Use exception handling mechanism to develop fault tolerant applications.	2	1	2	1	-	-	-	-	-	3	1
CO4	Analyze the concepts of multi threaded programming and synchronization.	1	2	1	2	-	-	-	-	-	3	1
CO5	Use GUI controls and event handling mechanism to develop interactive window/desktop applications.	2	1	2	1	-	-	-	-	-	3	1
CO6	Analyze need of applets, swings to develop simple web application.	2	1	2	1	-	-	-	-	-	3	1

	Wireless and Mobile Network (DCS-402)										
	COURSE OUTCOMES	**CO-PO Mapping**									
S#	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students become familiar with Wireless and mobile network and their terminologies.		1	2					2			
CO2	Knowledge of evolution of mobile network through various generations.		1	1		1			1			
CO3	Become familiar with the cellular concepts and various handoff techniques.		1	2	1							
CO4	Develop understanding of Mobile IP and the concept of data packet delivery in Mobile IP.		1	2					1			
CO5	Introduced with different types of random access protocols and controlled access protocols and other wireless technologies.		1	2	2							
CO6	Introduced with the concept of Cryptography for data security.		1	3					2			
CO7	Knowledge of various types of security attacks and various malwares.			3					1			

	Computer Architecture & Microprocessor (DCS-403)											
	Course Outcomes	CO-PO Mapping										
S No.	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	Introduction of microprocessor	3	2	1	-	-	-	-	-	-	-	-
CO2	Comprehend the basic organization of modern computer systems.	2	1	1	-	-	-	2	-	-	3	1
CO3	Analyze an instruction-set architecture, propose a suitable data path and control unit implementation.	1	1	-	2	-	-	-	-	-	3	1
CO4	Analyze the operation of fixed and floating point arithmetic units	1	1	-	-	-	2	-	-	1	3	1
CO5	Understand and apply the internal working flow of 8086microprocessor.	1	1	--	1	3	1	--	--	--	2	1
CO6	Apply assembly language programming in design of microprocessor based system .	1	--	--	2	2	--	--	--	--	3	2

	Data Communication &Network(DCS-404)											
	Course Outcomes	CO-PO Mapping										
S No.	CO Descriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	To understands the terminology and concepts of OSI reference model and the TCP/IP reference model and functions of each layer.	2	1	1	-	-	1	-	3	-	-	1
CO2	To identify the different types of network typologies, protocols, network devices and their functions within a network	2	1	1	-	-	1	-	3	-	-	1
CO3	To master the concepts of protocols, networks interfaces, and design/performance issues in LAN and WAN	2	1	1	-	-	-	-	3	-	-	2
CO4	To understand and building the skills of sub netting and routing mechanisms, familiarity with basic protocols of computer networks and how they can be used to assist in network design and implementation	2	1	1	-	-	-	-	3	\ -	-	2
CO5	To understand the concept of network connectivity and network connecting devices .	2	1	1	-	-	-	-	3	-	-	2
CO6	To understand the concept of wireless networking.	1	2	-	-	-	-	-	3	-	-	1

	Web Technology & Multimedia (DCS-405)											
	Course Outcomes	CO-PO Mapping										
S No.	CO Dsecriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	Apply various HTML tags used to design static web pages.	3	2	1	-	1	2	-	-	-	1	-
CO2	To learn and understand technical aspect of Multimedia Systems.Apply CSS and JavaScript Constructs to perform Client side validation and designing of dynamic web pages	2	1	1	-	-	2	2	-	-	3	1
CO3	Apply various PHP construct to develop server side applications and also familiar of transporting data among applications using XML	1	1	-	2	-	-	-	-	-	3	1
CO4	Understand how to configure Web servers and deployment of applications.	1	1	-	1	-	2	-	-	1	3	1
CO5	Design server side; Database and MVC based applications using Servlet, JSP and JDBC.	1	1	-	1	3	1	-	-	-	2	1
CO6	Understand Handling of asynchronous requests using AJAX programming.	1	-	-	2	2	-	-	-	-	3	2

	Oops with C++ Lab (DCS-451)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**
CO 1	Use various constructs of object orient programming	2	1	2	1	-	-	-	-	-	3	1
CO2	Write programs using conditional statements, looping statements,switch case statements.	2	1	2	1	-	-	-	-	-	3	1
CO3	Analyze the need of object oriented programming principles and its functions.	2	1	2	1	-	-	-	-	-	3	1
CO4	Apply concept of function overloading and exception handling mechanism to overcome run-time errors.	2	1	2	1	-	-	-	-	-	3	1
CO5	Prepare for writing multi threaded applications.	1	1	2	2	-	-	-	-	-	3	1
CO6	Use event handling and AWT to design GUI application.	1	2	1	2	-	-	-	-	-	3	1

	Wireless and Mobile Network Lab (DCS-452)										
	COURSE OUTCOMES	**CO-PO Mapping**									
S#	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students become familiar with basic concepts of Wireless mobile network and wireless generations.			3					2			
CO2	Students learn the importance and implementation of Ping command.			2					2			
CO3	Develop the understanding to select a set of wireless technologies to suit a given application.		1	2		1	1		1			
CO4	Develop understanding of Mobile IP and the concept of data packet delivery in Mobile IP.			2					1			
CO5	Learn the ideology, implementation and requirement behind different topologies.			3					2			
CO6	Ability to plan a wireless communication system for a given environment in which it is to be deployed.			2					2			

	Computer Architecture & Microprocessor Lab(DCS-453)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Dsecriptions**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO 1	Introduction of registers	3	2	1	1	-	-	-	-	-	1	-
CO2	Show the interaction between CPU, memory and I/O ports by implementing programs	2	1	1	-	-	-	2	-	1	3	1
CO3	Program a microprocessor using instruction set of 8086.	1	1	-	2	-	-	1	-	-	3	1
CO4	Addition and Subtraction of two 8-bit operands.	1	1	1	-	-	2	-	-	1	3	1
CO5	Multiplication and Division of two 16-bit operand	1	1	-	1	3	1	-	-	-	2	1
CO6	Demonstrate is clear understanding of the interaction for data transfer between CPU, memory and I/O port	1	-	-	2	2	-	-	-	-	3	2

	Data Communication &Network lab (DCS-454)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO8**	**PO 9**	**PO 10**	**PO 11**
CO 1	Identification of various types of cables such as co-axial and twisted pair cables .	1	2	2	-	1	-	-	3	-	-	2
CO2	Concepts of switch and hubs and estimation of a LAN.	2	1	2	-	-	-	-	3	-	-	2
CO3	Use of protocols in establishing LAN	2	1	2	-	-	-	-	3	-	-	1
CO4	Implementation of troubleshooting of networks.	2	1	2	-	-	-	-	3	-	-	1
Co5	Installation of network device drivers and installation of networks.	1	2	1	-	-	-	-	3	-	-	1
Co6	Installation of proxy server and broadband wireless and blue tooth technology.	1	2	1	-	-	-	-	3	-	-	1

	Web Technology & Multimedia (DCS-405)											
	Course Outcomes	CO-PO Mapping										
S No.	CO Dsecriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	Apply various HTML tags used to design static web pages.	3	2	1	-	1	2	-	-	-	1	-
CO2	To learn and understand technical aspect of Multimedia Systems.Apply CSS and JavaScript Constructs to perform Client side validation and designing of dynamic web pages.	2	1	1	-	-	2	2	-	-	3	1
CO3	Apply various PHP construct to develop server side applications and also familiar of transporting data among applications using XML	1	1	-	2	-	-	-	-	-	3	1
CO4	Understand how to configure Web servers and deployment of applications.	1	1	-	1	-	2	-	-	1	3	1
CO5	Design server side; Database and MVC based applications using Servlet, JSP and JDBC.	1	1	-	1	3	1	-	-	-	2	1
CO6	Understand Handling of asynchronous requests using AJAX programming	1	-	-	2	2	-	-	-	-	3	2

	Java Programming (DCS-501)										
	Course Outcomes	CO-PO Mapping									
S No.	CO Dsecriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	Introduction of java and Able To Find And Understand Java Tokens, Java Statements, Constants, Variables, Data Types.	2	3	1	-	1	-	-	-	-	1	-
CO2	Use various programming, creating threads, constructs of object oriented language.	1	1	-	-	2	-	-	-	-	3	-
CO3	Apply principles of object oriented programming to model/design real world problems.	1	-	-	3	-	-	-	-	-	1	2
CO4	Use exception handling mechanism to develop fault tolerant applications.	-	-	1	2	3	-	-	-	-	-	-
CO5	Analyze the concepts of multi-threaded programming and synchronization	1	1	-	-	-	-	-	-	-	3	2
CO6	Use GUI controls and event handling mechanism to develop interactive window/desktop applications. Analyze need of applets, swings to develop simple web application.	-	-	-	-	-	-	-	2	3	1	-

	Computer Graphics and Animation (DCS-502)											
	Course Outcomes	CO-PO Mapping										
S No.	CO Dsecriptions	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	Design And Implement Model And Viewing Transformations.	3	2	--	1	--	---	---	---	---	---	---
CO2	The Graphics Algorithms to draw line and circle.	1	1	--	---	---	---	---	---	2	3	---
CO3	Boundary Fill, Flood Fill,Scan Line Polygon Fill Algorithm a**re** algorithms used for the purpose of coloring figures in computer graphics.	--	1	--	---	---	---	---	---	3	2	---
CO4	Interactive Render Loop With A 3d Graphics Api .	--	2	---	---	---	---	--	--	3	1	--
CO5	Manipulation And Display Of Pictorial Information.	--	--	--	--	3	--	--	--	2	1	--
CO6	Implement Three-Dimensional (3d) Computer Images, Such As Animated Films	1	--	--	--	--	--	--	--	2	1	3

	E-commerce and ERP(DCS-503)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO8**	**PO 9**	**PO 10**	**PO 11**
CO 1	The fundamental principles of **e**-Business and **e- Commerce** and the role of Management.	1	-	-	-	2	3	-	2	-	-	-
CO2	The underlying used technologies with emphasis on Internet Technologies.	1	-	-	-	2	3	-	2	-	-	-
CO3	The application of tools and services to the development of small scale **e-Commerce** applications .	1	-	-	-	2	3	-	2	-	-	-
CO4	To understand the different types of business model of e-commerce.	1	-	-	-	2	3	-	2	-	-	-
CO5	To understand the concepts of supply chain management (SCM).	1	-	-	-	2	3	-	2	-	-	-
CO6	To understand the concepts of Enterprise resource planning(ERP).	1	-	-	-	2	3	-	2	-	-	-

	Database Management System (DCS-504)										
	COURSE OUTCOMES	**CO-PO Mapping**									
S#	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students become familiar with DBMS and its various terminologies. Knowledge of various features and functionalities of using DBMS.	1	2	2	1	2						
CO2	Students are familiarized with the concept of 3 level dbms architecture and different views of users.		1	1		2						
CO3	Develop understanding of data models and their role in database designing.			1	1	2	1					
CO4	Familiarized with the concept of E-R model , various keys, attributes, and constraints.				2	2	1					
CO5	Knowledge of SQL and various commands of SQL.					2				1	3	
CO6	Introduced with the concept of database integrity and concurrency control.		1	1	2						1	
CO7	Develop the ability to write simple queries in SQL.					2				1	3	1

	Cyber law(DCS-505)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO8**	**PO 9**	**PO 10**	**PO 11**
CO 1	Classification and their benefits of information security and different types of cyber laws .	1	2	2	-	-	3	-	2	-	-	-
CO2	To understand the concepts of history of information system.	2	1	2	-	-	3	-	2	-	-	-
CO3	To understand the concepts of security in mobile and wireless computing.	2	1	2	-	-	3	-	2	-	-	-
CO4	To understand the different security threats to E-commerce	2	1	2	-	-	3	-	2	-	-	-
CO5	Analyze the different Security Attacks, Services, and Mechanisms work security models.	2	1	2	-	-	3	-	2	-	-	-
CO6	Analyzing the model of cryptographic system,issues in document security.	1	2	2	-	-	3	-	2	-	-	-

	Java programming lab (DCS-551)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO8**	**PO 9**	**PO 10**	**PO 11**
CO 1	Simple java program using control and looping statements.	1	2	-	1	2	-	-	-	-	3	2
CO2	Simple java program to demonstrate use of command line argument in java.	1	2	-	1	2	-	-	-	-	3	2
CO3	Simple java program to define a class,describe its constructor ,overload the constructor.	1	2	-	1	2	-	-	-	-	3	2
CO4	Simple java program to define a instance methods for setting and retrieving values of instance variables.	2	1	-	2	1	-	-	-	-	3	2
CO5	Simple java program for dynamic method invocation .	2	1	-	2	1	-	-	-	-	3	2
CO6	Simple java program use of nested else.	1	2	-	1	2	-	-	-	-	3	2

	Computer Graphics and Animation Lab(DCS-552)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Dsecriptions**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO 1	Implement Line drawing using C++	1	--	--	---	---	---	-----	---	2	3	-----
CO2	Implement DDA algorithm for line drawing using C++	1	--	---	---	---	---	--	--	3	2	1
CO3	Implement Circle drawing using C+ +	--	1	--	---	---	--	--	--	2	3	--
CO4	Implement Bresennham's algorithm for line drawing	2	1	--	--	--	---	--	--	3	3	--
CO5	Implement to fill coler in triangle,cirlce,polygon	--	1	--	--	--	--	--	--	3	2	--
CO6	Able to create an animation to indicate a ball bouncing and create an animation to represent the growing moon.	1	1	--	---	--	--	---	---	2	3	--

	Database Management System Lab(DCS-554)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Dsecriptions**	**PO1**	**PO2**	**PO 3**	**PO4**	**PO 5**	**PO 6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO 1	Introduction to SQL,statement	1	2	--	1	--	---	---	---	---	3	--
CO2	Design and implement a database commands such as insert,delete,update,etc for a given problem.	2	-	--	--	--	--	--	---	--	3	1
CO3	Formulate a query to retrieve information from database	1	3	--	--	--	--	--	--	1	2	1
CO4	To implement database security and maintenance.	1	2	--	--	--	--	--	--	1	3	--
CO5	Normalize a database.	1	1	---	---	2	---	---	---	---	3	--
CO6	Applying enforce integrity constraints on a database.	1	1	--	--	2	1	1	--	--	3	1

	Mini Project Lab (DCS-555)										
	COURSE OUTCOMES	**CO-PO Mapping**									
S#	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students get a glimpse of the real world problems and challenges that need IT based solutions.		1	1	2			1			2	2
CO2	Students undergo an industrial training for a period of 30 to 45 days.				1						3	2
CO3	Develop an awareness of several domain areas where IT can be effectively used.		2	2	1			1			1	
CO4	Ability to develop their own small project that could be implemented successfully.		2	1	3	3						3
CO5	Learn the basics of preparing the documentation of a project.		1		2						2	3
CO6	Develop the ability to present their contents through improved communication skills.							3			1	2

	Software Engineering (DCS -601)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO8**	**PO 9**	**PO 10**	**PO 11**
CO 1	To understand basics about software engineering principles, methods and practices.	1	2	2	3	-	-	-	-	-	2	2
CO2	To analyze software requirement specification and to identify software quality assurance models that are essential to develop and to measure the quality of software.	2	1	2	3	-	-	-	-	-	2	1
CO3	To explain the software design strategies and to apply software measurement and metrics using Function point, cyclomatic complexity .	2	1	2	3	-	-	-	-	-	2	1
CO4	To apply and understand various types of testing strategies such as white box and black box testing.	2	1	2	3	-	-	-	-	-	2	1
CO5	To analyze software risk with estimation parameters such as cost, effort, schedule/duration and understand the concepts of software maintenance, reverse engineering, software configuration management	2	1	2	3	-	-	-	-	-	2	1
CO6	To understand software project management and software quality management and estimations.	1	2	1	3	-	-	-	-	-	1	2

	(Dot) .Net Technology(DCS-602)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Dsecriptions**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO 1	Design, create, build, and debug Visual Basic applications	2	3	1	-	1	-	-	-	-	1	-
CO2	Implement syntax rules in Visual Basic programs.	1	1	-	-	2	-	-	-	-	3	-
CO3	Write and apply loop structures to perform repetitive tasks.. Write and apply procedures, sub-procedures, and functions to create manageable code	1	-	-	3	-	-	-	-	-	1	2
CO4	Create one and two-dimensional arrays for sorting, calculating, and displaying of data. Multiple Forms used to create Projects.	-	-	1	2	3	-	-	-	-	-	-
CO5	Write Visual Basic programs using objects, Common Controls, MDI forms	1	1	-	-	-	-	-	-	-	3	2
CO6	Graphics used to create animation. 10. Mouse Monitoring used to keep track of mouse.	-	-	-	-	-	-	-	2	3	1	-

	Management Information System (DCS-603)										
	Course Outcomes	CO-PO Mapping									
S No.	CO Descriptions	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11
CO 1	Describe the role of information technology and information systems need, importance in business. Describe how the Internet and World Wide Web provide a global platform for e-business, business mobility and communications.	3	2	--	1	--	---	---	---	---	---	1
CO2	Define an information system from both a technical and business perspective and distinguish between computer literacy and information systems literacy.	1	1	--	2	---	---	---	---	2	1	3
CO3	Assess the relationship between organizations, information systems and business processes, including the processes of, Database Backup & Storage, Archive & Retrieve, Disaster Recovery and protection.	3	1	--	---	1	---	---	---	1	2	1
CO4	Identify the major management challenges to building and using information systems in organizations such as Data and internet Security, Security Information Management and Release management.	--	2	---	2	1	---	--	--	3	1	--
CO5	Classification and their benefits of information security and different types of cyber laws. To understand the different security threats to E-commerce and Expert System.	--	--	--	--	3	--	--	--	2	1	--
CO6	Understand the leadership role of Management Information Systems in achieving business competitive advantage through informed decision making. The underlying used technologies with emphasis on Internet Technologies. .	1	--	--	--	--	1	--	--	2	1	3

	Artificial Intelligence & Neural Network (DCS-604)										
	COURSE OUTCOMES	**CO-PO Mapping**									
S#	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students become familiar with the concept of Artificial intelligence and its relevant terminologies. Knowledge of Natural language processing.	1	2	2	2	3		1				
CO2	Knowledge of the concept of Searching, its importance and various search strategies.		2	1	3	3		1			2	
CO3	Develop understanding of different Knowledge representation and reasoning techniques .		2	1	3	2					2	
CO4	Introduced with the concept of Machine learning both Supervised and Unsupervised learning.		2	1	2	2		2			3	
CO5	Students become familiar with the design principles of pattern recognition system.		2	1	2	3					1	
CO6	Introduced with the concept of Neurocomputing and Neuroscience	2	1	1	2	3		2				

	Software Engineering lab(DCS -651)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Descriptions**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO7**	**PO8**	**PO 9**	**PO 10**	**PO 11**
CO 1	To understand the purpose of testing, types of errors, fault models and various test process.	1	2	1	3	-	-	-	-	-	1	2
CO2	To understand adequacy assessment using control flow and path testing techniques.	1	2	1	3	-	--	-	-	-	1	2
CO3	To understand mini project by following SDLC.	1	2	1	3	-	-	-	-	-	1	2
CO4	Analyze various states, transitions and graph matrices regarding to state and graph matrices.	2	1	2	3	-	-	-	-	-	1	2
CO5	Design test cases for the real world problems effectively by following standards.	2	1	2	3	-	-	-	-	-	1	2
CO6	Apply appropriate software testing tools, techniques and methods for more effective systems during test planning and execution phases of software development project and risk analysis.	1	2	1	3	-	-	-	-	-	1	2

	(Dot) .Net Technology Lab(DCS-652)											
	Course Outcomes	**CO-PO Mapping**										
S No.	**CO Dsecriptions**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
CO 1	Understanding About History Of Dot net Programming and Customizing a form.	1	2	-	1	-	-	-	-	-	3	-
CO2	Students Are Introduced To Visual Basic Programming Language, Integrated Development Environment, Properties Of Basic Controls	2	-	-	-	-	-	-	-	-	3	1
CO3	Students Learn How To Display Information Using Dialog Boxes, Various Loop Structures And About Functions And Procedures	1	3	-	-	-	-	-	-	1	2	1
CO4	Creation Of Single Dimensional, Multi Dimensional And Control Array. Also, List Boxes, Combo Boxes, Menus And Mdis Are Being Covered	1	2	-	-	-	-	-	-	1	3	-
CO5	Students Are Introduced To Database Management System Concepts , Its Advantages And Components. Data Types And Normal Forms Are Being Covered	1	1	-	-	-	-	-	-	-	-	-
CO6	Basic Sql Queries, Group By Commands, Designing Of Forms And Reports Using Visual Basics Are Covered.	1	1	-	-	2	1	1	-	-	3	1

	Project Lab (DCS-655)										
	COURSE OUTCOMES	**CO-PO Mapping**									
S#	**CO DESCRIPTION**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**
CO1	Students are able to address the real world problems and find the required solution		1	1	2			1			2	2
CO2	Develop the ability to discover potential research areas in the field of IT.			2	2						3	2
CO3	Develop the understanding to compare and contrast between vast array of literatures available.				2	1			1	1	2	
CO4	Develop skills and knowledge specification of softwares used in computers		2	1	2	2			1	1	2	2
CO5	Student are able to work and learn from implementing an application software and study its functional and performance aspects and submit a report.		2		3	2			1		2	3
CO6	Develop an ability to work in teams and improve their communication and management skills of the students.		2		1	1			3	1	2	3