Title of Course:	**:**	**Evolution of Architecture and Engineering (2 + 0)**			
Course Code	**:**	CET 201			
Semester	**:**	3rd			
Technology	**:**	Civil Engineering Technology			
Effective	**:**	22 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 30% Mid Semester Examination 50% Final Written Examination		N/A	
Credit Hours/week	**:**	**Th**	2	**Pr**	0
Minimum Contact Hours	**:**	**Th**	32	**Pr**	0
Marks	**:**	**Th**	50	**Pr**	0

After Completing the Course, each student will be able to:

Sr. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**Explain** the evolution of architecture in the light of historic, social, and cultural contexts.	C2	6
2	Theory	**Determine** modern architectural trends and use of advanced materials	C3	1

Relevant Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

1	Engineering Technology Knowledge:	√	7	Environment and Sustainability:	
2	Problem Analysis:		8	Ethics:	
3	Design/Development of Solutions:		9	Individual and Team Work:	
4	Investigation:		10	Communication:	
5	Modern Tool Usage:		11	Project Management:	
6	The Engineering Technologist & Society:	√	12	Lifelong Learning:	

OBJECTIVES:

- To know about Architecture and its importance in civil engineering.

COURSE CONTENTS:

General introduction to history of architecture, development of various cultures and civilizations from the prehistoric to the present-day world with emphasis on building types of Egyptian architecture and Persian empire, Origins and development of Persian art and architecture, example of architecture (Palaces, Temples, Tombs) and city planning Mesopotamian Architecture: Characteristics of the valley of the river Tigris and Euphrates, people and their culture, Influences on the art and architecture of Mesopotamia. Examples of Architecture (palaces, temples, and ziggurats) and city planning.

Indus Valley Civilization: its location, influences on architecture, examples of the Indus valley architecture and city planning.

European Civilization & its Buildings: Greek Period: Greek civilization, location, and influences on its architecture, Hellenic and Hellenistic Greece, Example of Greek architecture.

Muslim Civilization: Emergence and development of Islamic Architecture. Geographical, climatic, religious, social, historical aspects of architecture. A brief survey of architectural developments during Umayyad, Abassid, Fatmid, Spanish, Ottoman, Persian and Mughal dynasties.

Modern Civilization: Developments in architecture colonial period in Colonies and their impact on Traditional architecture. Examples of colonial architecture from North Africa and Indian sub-continent Modern Movement in Architecture, Post Modern Architecture, Deconstruction.

Architectural theories: standards, Modern buildings, construction materials, and architectural complexes.

Recommended Books

1. Owen Hopkin, Architectural styles a visual guide, Laurence King Publishing, Latest edition.

2. Sir Banister Fletcher's, A History of Architecture, Bloomsbury Publishing, Latest edition.

3. R. Furneaux Jordan, A concise history of Western architecture, Harcourt Brace Jovanovich, Latest edition.

4. Hamlyn Paul. World Architecture: An illustrated history, Latest edition.

Approval:	Industrial Advisory Board	Res. No. 4(ii)	Dated:01.11.2023
	Board of Studies	Res. No. 2.1	Dated:07.11.2023
	Board of Faculty	Res. No. 1.3(b)	Dated: 29-11-2023
	Academic Council	Res. No. 106.3(xxv)	Dated: 14-12-2023

Title of Course:	**:**	**Environmental Technology (Th + Pr) (1 + 1)**			
Course Code	**:**	CET 202			
Semester	**:**	3rd			
Technology	**:**	Civil Engineering Technology			
Effective	**:**	22 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 30% Mid Semester Examination 50% Final Written Examination		50% Sessional Work, ---------- 50% Final Lab. Examination	
Credit Hours/week	**:**	**Th**	1	**Pr**	1
Minimum Contact Hours	**:**	**Th**	16	**Pr**	48
Marks	**:**	**Th**	50	**Pr**	50

After Completing the Course, each student will be able to:

Sr. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**State** the laws, acts and standards being followed to protect the environment.	C1	7
2	Theory	**Describe** the fundamental components of sewer, sewerage treatment, air, and noise pollution systems.	C2	7
3	Theory	**Solve** the fundamental components of sewer and various types of pollution factors.	C3	2
4	Practical	**Demonstrate** the effect of the parameters for the water quality.	P3	2
5	Practical	**Respond** actively during lab work	A-2	9

Relevant Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

1	Engineering Technology Knowledge:		7	Environment and Sustainability:	√
2	Problem Analysis:	√	8	Ethics:	
3	Design/Development of Solutions:		9	Individual and Teamwork:	√
4	Investigation:		10	Communication:	
5	Modern Tool Usage:		11	Project Management:	
6	The Engineering Technologist & Society:		12	Lifelong Learning:	

OBJECTIVES:

1. To introduce basic concepts relating to the provisions of water supply and wastewater collection facilities.

2. To enable students to design water supply and wastewater collection systems.

COURSE OUTLINE:

Introduction: Introduction to Environment; Environmental Impact Assessment (EIA); Environmental Protection Agencies (USEPA and PEPA), Procedure to conduct EIA of civil engineering projects. National Environmental Quality Standards (NEQs).
Environmental Pollution: Pollution and its Types; Sources, Sampling, Monitoring, Mitigation, and Effects; Atmosphere and Atmospheric Layers. Global Warming and its Causes; Green House Gases.
Solid Waste Management: Introduction to Solid Waste (SW) and its Management; Types and Sources of SW generation; Collection & Transportation of SW; and Disposal. Methods to Treat SW; Environmental Problems Caused by SW.
Wastewater: Introduction to Wastewater and its Sources; Estimation of Wastewater Generation; Collection and Conveyance/Transportation of Wastewater; Types of Containments Present in the Wastewater; Treatment Methods of Wastewater; Recycling Applications of Wastewater.
Sewers: Classification of Sewage and Sewer Systems; Combined and Separate Sewer Systems; Sewer Appurtenances and Sewer Testing.

PRACTICAL WORK TO BE CARRIED OUT:

1. Composition of solid waste (percentage) On-Campus Activity.
2. To determine the amount of Settleable Solids (SS) in waste sample (by Imhoff Cone Method).
3. To determine the amount of Total Dissolved Solids (TDS) in wastewater sample.
4. To determine the amount of volatile suspended solids (VSS) in wastewater sample (by gravimetric method).
5. To determine the amount of Total Suspended Solids (TSS) in wastewater sample (by Gravimetric Method).
6. To determine the Biological Oxygen Demand (BOD) of wastewater sample
7. To determine the Chemical Oxygen Demand (COD) of wastewater sample (Colorimetric Method)
8. Determination of Dissolve Oxygen (DO) by Direct Method/Probe Method
9. Moisture content Determination (by direct weight loss method).
10. NOx and SOx, COx and H_2S by hand meters

RECOMMENDED BOOKS:

1. Revelle, Charles S. Civil and Environmental Systems Engineering. 2nd Edition.
2. Sharma. Comprehensive Environmental Studies. Latest Edition
3. Reinhart. Solid Waste Engineering. Latest Edition.
4. S.C RANGWALA. Fundamentals of Water Supply and Sanitary Engineering. Latest Edition.

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	Board of Studies	Res. No. 2.1	Dated:07.11.2023
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Title of Course:	**Fluid Mechanics (Th + Pr) (2 + 1)**			
Course Code:	CET 203			
Semester:	3rd			
Technology:	Civil Engineering Technology			
Effective:	22 – Batch and onwards			
Pre-requisite:	Nil			
Co-requisite:	Nil			
Assessment	**Theory**		**Practical**	
	20% Sessional Work, 30% Mid Semester Examination 50% Final Written Examination		50% Sessional Work, ----------, 50% Final Lab. Examination	
Credit Hours/week	**Th**	2	**Pr**	1
Minimum Contact Hours	**Th**	32	**Pr**	48
Marks	**Th**	50	**Pr**	50

After Completing the Course, each student will be able to:

S. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**Explain** the basic concept of fluid statics, kinematics, and dynamics.	C2	1
2	Theory	**Solve** various problems related to fluid at rest and motion.	C3	2
3	Practical	**Conduct** a different experiment to verify the theoretical principles of fluid mechanics.	P4	4
4	Practical	**Contribute** actively to the lab work of basic fluid mechanics.	A2	9

Relevant Program Learning Outcomes (PLOs):
The course is designed so that students will achieve the following PLOs:

1	Engineering Technology Knowledge	√	7	Environment and Sustainability	
2	Problem Analysis	√	8	Ethics	
3	Design/Development of Solutions		9	Individual and Teamwork	√
4	Investigation	√	10	Communication	
5	Modern Tool Usage		11	Project Management	
6	The Engineering Technologist & Society		12	Lifelong Learning	

OBJECTIVES:

1. To provide a broad concept of fluid mechanics.
2. To enable students to solve problems relating to pipe flow and open channel flow.

COURSE OUTLINE:

Introduction: Fluid mechanics, hydrostatics, kinematics, hydrodynamics, hydraulics, solids and fluids, liquids and gases, units, and dimensions.

Physical properties of fluids: Specific weight, density, specific volume, surface tension, compressibility, viscosity, units of viscosity, measurement of viscosity, Newton's equation of viscosity.
Fluid Statics: Pressure intensity and pressure head, specific weight relationship, absolute and gauge pressure, measurement of pressure, Piezometer, Manometer, Pressure Transducers. Differential manometer and Bourden gauge. Forces on submerged planes and curved surfaces and their applications. Buoyancy and floatation, Equilibrium of floating and submerged bodies.
Fluid Kinematics: Steady and unsteady flow, laminar and turbulent flow, uniform, and non-uniform flow. Path line, streamlines and stream tubes, Velocity and discharge, Equation of continuity for compressible and incompressible fluids.
Hydrodynamics: Different forms of energy in a flowing liquid, head, Bernoulli's equation and its application, Energy line and Hydraulic gradient line, free and forced vortex.
Flow Measurement: Orifices and mouthpieces, Weirs and notches, Pitot tube and pitot-static tube, Venturimeter, Salt velocity method, Colour velocity method, Radioisotope methods.
Uniform Flow in Open Channels: Chezy's and Manning's equations, The most economical channel sections.

Steady Flow through Pipes

Losses in pipelines, minor and major losses, Darcy-Weisbach equation for major loss of head in pipes, Pipes in series and parallel, Transmission of energy through pipes.

PRACTICAL WORK TO BE CARRIED OUT:

1. Introduction to Practical contents, Equipment, and HSE (Health, Safety and Environment) measures.
2. To perform an experiment for determination of the viscosity of a given fluid (oil/water) by using falling sphere type viscometer.
3. To check accuracy of Bourden Gauge through its calibration by means of dead weight apparatus.
4. To conduct experiment for the magnitude of Hydrostatic force on partially submerged surface and locate center of the pressure.
5. To conduct an experiment for the magnitude of Hydrostatic force on fully submerged surface and locate center of the pressure.
6. To conduct experiment for the metacentric height and locate the positions of various important points of a floating body.

7. To conduct experiment for measurement of the pressure using Manometer.
8. To perform experiment for Study of Laminar, Transitional and Turbulent Flow using Reynold's concept equipment.
9. To conduct an experiment for coefficient of discharge of rectangular and triangular notches.
10. To conduct an experiment for the hydraulic coefficients of an orifice.
11. To verify Bernoulli's theorem for steady flow of water.
12. To measure the flow of incompressible fluid in pipes by Flow Meters.
13. To determine the coefficient of weir for: (a) Broad crested weir; (b) Sharp crested weir; and (c) Ogee weir

RECOMMENDED BOOKS:

1. Fluid Mechanics for Civil Engineers by N. B. Webber, Chapman & Hall, (Latest Edition).
2. Fluid Mechanics with Engineering Applications by Dougherty, Franzini and Fennimore, McGraw Hill, New York. (Latest Edition).
3. An Introduction to Engineering Fluid Mechanics by J. A. Fox, Macmillan Company (Latest Edition)
4. Mechanics of Fluids by B. S. Massey, Wan Nost Reinhold International Rand hold Company Ltd., London (Latest Edition).

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Title of Course:	**:**	**Mechanics of Solids (Th + Pr) (2 + 1)**			
Course Code	**:**	CET 204			
Semester	**:**	3rd			
Technology	**:**	Civil Engineering Technology			
Effective	**:**	22 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 30% Mid Semester Examination 50% Final Written Examination		50% Sessional Work, ----------, 50% Final Lab. Examination	
Credit Hours/week	**:**	**Th**	2	**Pr**	1
Minimum Contact Hours	**:**	**Th**	32	**Pr**	48
Marks	**:**	**Th**	50	**Pr**	50

After Completing the Course, each student will be able to:

Sr. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**Solve** problems related to simple stress and strain in materials subjected to axial forces.	C2	1
2	Theory	**Analyze** simple beams subjected to simple bending loads and explain torsion and energy theory.	C4	2
3	Practical	**Perform** experiments related to the mechanical properties of materials.	P2	9
4	Practical	**Justify** the applications of experiments related to stress strain and deflection of materials.	A3	10

Relevant Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

1	Engineering Knowledge	√	7	Environment and Sustainability:	
2	Problem Analysis:	√	8	Ethics:	
3	Design/Development of Solutions:		9	Individual and Teamwork:	√
4	Investigation:		10	Communication:	√
5	Modern Tool Usage:		11	Project Management:	
6	The Engineering Society:		12	Lifelong Learning:	

OBJECTIVES:

1. To develop an understanding of problems related to simple stress and strain in materials subjected to axial forces.
2. To compute stresses in beams subjected to simple bending loads and torsion.
3. Understanding of strain energy concepts and behavior of columns.

COURSE OUTLINE:

Simple stress and strain

Stress, strain and Hooks Law, Deformation of a body due to self-weight and force acting on it, Principle of superposition, Deformation in the bars of different sections, Stresses in determinate and indeterminate structures, Thermal stress in simple and composite bars, Elastic Constants and their relations.

Analysis of Beams

Centroid of plane figures (Symmetrical and Unsymmetrical sections), Second moment of area/Moment of inertia of different composite sections; Product of Inertia, Principal stresses and Principal Moment of Inertia, Theory of simple bending, Bending stress and determination of flexural formula.

Strain Energy

Strain energy stored in a body due to gradual, sudden and impact loads, Theory of torsion of solids and hollow circular shafts.

Column and Struts

Columns, Types, and different formulae for critical load like Euler's and Rankine's formula.

PRACTICAL WORK TO BE CARRIED OUT:

1. To study the stress strain curve of different materials.
2. To study the different stresses on the object.
3. To find the elastic modulus of different materials.
4. To study the yield strength and bending test on steel.
5. To study the yield strength and bending test on Wood.
6. To study the yield strength and bending test on Concrete.
7. To determine the principal stress using strain rosette and graphical methods (Mohr's Circle).
8. To study the biaxial bending behavior of various structural and non-structural shapes.
9. To study the stress trajectories for the wooden beam element.

RECOMMENDED BOOKS:

1.Craig, R. R. (2011) Mechanics of Materials, 3rd Edition, John Wiley and Sons (Latest Edition).

2. Beer, F. P., E. R. Johnston, J. T. DeWolf, and D. F. Mazurek (2011) Mechanics of Materials, (Latest Edition) McGraw Hill.

3. Hibbeler, R. C. (2011) Mechanics of Materials, Prentice Hall (Latest Edition).

4. Gere, J. M., and B. J. Goodno (2012) Mechanics of Materials, Brief edition, Cenage learning (Latest Edition).

5. Case, J., L. Chilver, and C. T. F. Ross (1999) Strength of Materials and Structures, (Latest Edition) Edward Arnold.

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	Board of Studies	Res. No. 2.1	Dated:07.11.2023
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Title of Course:	**:**	**Geology (Th + Pr) (1 + 1)**			
Course Code	**:**	CET 205			
Semester	**:**	3rd			
Technology	**:**	Civil Engineering Technology			
Effective	**:**	22 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 30% Mid Semester Examination 50% Final Written Examination		50% Sessional Work, ----------, 50% Final Lab. Examination	
Credit Hours/week	**:**	**Th**	1	**Pr**	1
Minimum Contact Hours	**:**	**Th**	32	**Pr**	48
Marks	**:**	**Th**	50	**Pr**	50

After Completing the Course, each student will be able to:

Sr. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**Describe** basic concepts of geology, formation of rocks and structural features of strata	C1	1
2	Theory	**Apply** knowledge of geology in civil engineering	C3	1
3	Practical	**Perform** various experiments of geology related to rocks identification and strength.	P3	9
4	Practical	**Contribute** actively to the lab work.	A2	9

Relevant Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

1	Engineering Knowledge	√	7	Environment and Sustainability:	
2	Problem Analysis:		8	Ethics:	
3	Design/Development of Solutions:		9	Individual and Team Work:	√
4	Investigation:		10	Communication:	
5	Modern Tool Usage:		11	Project Management:	
6	The Engineering Society:		12	Lifelong Learning:	

OBJECTIVES:

1. To understand basic concepts of geology, formation of rocks and structural features of strata

2. To be able to apply knowledge of basic concepts of geology in civil engineering projects

COURSE OUTLINE:

Introduction

Introduction to Geology, Importance of Geology for Civil Engineering Projects, Geological Science and Subdivisions: Earth's Materials, Earth's Process, Earth's History, Structure and Composition of the Earth, Geological Times, Sequence and Principles of Stratigraphy.

Minerals and Rocks

Introduction to Minerals and Rocks, Identification of Minerals, Crystal Form of Minerals, Rocks: Igneous, Sedimentary and Metamorphic, Rock Cycle, Rock-Forming Minerals, Physical Properties of Rocks and Minerals and Their Determination, Classification of Rocks and Minerals with Respect to Color, Hardness, Grain Size, Texture, Strength and Weathering, Identification of Common Rock Types and Their Engineering Properties: Shales, Sandstones and Limestone.

Structural Geology

Introduction to Structural Geology, Dip and Strike, Folds and Their Types, Faults and their Causes, Classification of Faults with Respect to Relative Moment, Dip and Strike of Strata, Amount of Inclination, Mode of Occurrence, Joints and Their Classification, Field Interpretation of Folds Faults and Joints, Structures due to Denudation.

Selection of Sites for Civil Engineering Projects

Role of Geology in Selection of Sites for Dams, Reservoirs, Tunnels and Other Civil Engineering Projects, Such as Highways, Airfields and Bridges, Brief Introduction of Local Geology.

PRACTICAL WORK TO BE CARRIED OUT:

1. Introduction to the Engineering Geology Laboratory and HSE (Health, Safety and Environment) measures.
2. To determine the hardness of minerals using Moh's scale.
3. To determine the streak of minerals.
4. Estimation of RQD, TCR, SCR and Fracture Index using given rock core samples
5. To determine the compressive strength of rocks using Schmitt hammer.
6. To determine the different properties of rock core by ultrasonic pulse wave.
7. To determine the tensile strength of rocks in UTM machine.
8. To determine the slake durability index (Weathering) of rocks.
9. To determine the presence of carbonates in rocks using acid test.
10. To observe the folds using sand box.
11. To observe the different types of faults using sand box.
12. To distinguish the folds and faults in rocks at site.
13. To prepare drawing of Cross Sections from Geological maps.
14. To perform open ended lab project.

RECOMMENDED BOOKS:

1. A Geology for Engineers, Blyth, F.G.H, Arnold International, Latest Edition
2. Goodman, R.E: Engineering Geology: Rock in Engineering Construction, John Wiley & Sons, Inc., Singapore, Latest Edition

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	Board of Studies	Res. No. 2.1	Dated:07.11.2023
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Title of Course:	**:**	**Applied Chemistry (Th + Pr) (2 + 1)**			
Course Code	**:**	NSC 201			
Semester	**:**	3rd			
exvcTechnology	**:**	Civil Engineering Technology			
Effective	**:**	22 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 30% Mid Semester Examination 50% Final Written Examination		50% Sessional Work, ---------- 50% Final Lab. Examination	
Credit Hours/week	**:**	**Th**	2	**Pr**	1
Minimum Contact Hours	**:**	**Th**	32	**Pr**	48
Marks	**:**	**Th**	50	**Pr**	50

After Completing the Course, each student will be able to:

Sr. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**To apply** knowledge of chemistry in various industrial process for civil engineering materials.	C1	1
2	Theory	**To introduce** students with thermodynamics and physico-chemical properties of water to analyze water quality.	C2	2
3	Practical	**Perform** experiments and carry out calculations to determine conductivity, boiling point, PH, concentration, etc.	P1	1
4	Practical	**Contribute** Actively during lab work.	A2	**9**

Relevant Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

1	Engineering Technology Knowledge	√	7	Environment and Sustainability:	
2	Problem Analysis	√	8	Ethics:	
3	Design/Development of Solutions:		9	Individual and Teamwork:	√
4	Investigation		10	Communication:	
5	Modern Tool Usage		11	Project Management:	

6	The Engineering Technologist & Society:		12	Lifelong Learning:	

OBJECTIVES:

The course aims at elucidating principles of applied chemistry in industrial systems, water treatment, engineering materials and analytical techniques.

COURSE OUTLINE:

Introduction: Periodic table, Atoms and molecules structure, Introduction to chemical equation and calculations, Types of Chemical Reactions, Basic concept of Chemical bonding.

Properties of Gas & Liquids: Gas Laws, Kinetic gas equation, Surface Tension, Viscosity, Osmosis, Osmotic Pressure, pH-Buffer solution, Spectrophotometer, Basic concepts of Colloidal Chemistry.

Fuels & Lubricants: Types of fuels, classification of fossil fuels, relative merits of gaseous, liquid and solid fuels, Calorific values, Determination of calorific value of solid or liquid fuel using Bomb calorimeter and numerical examples, Definition and properties of Lubricants, mechanism, industrial application and its function in bearings, and Synthetic lubricants.

Corrosion and its Control: Definition of corrosion and factors affecting corrosion rate. Metal coatings, Inorganic coatings, Organic coatings – use of paints varnishes and enamels, Internal corrosion preventive measures- alloying (with reference to passivating, neutralizing and inhibition) and heat treatment (quenching, annealing).

Electro and Thermo chemistry: Laws of Electrolysis, E.M.F. series, corrosion (Theories, inhibition & protection), Chemical thermodynamics, Hess's Law, Heat of reaction, Relation between H and U measurement of heat reaction.

PRACTICAL WORK TO BE CARRIED OUT:

1. Introduction of the common apparatus, glassware's and chemical reagents used in chemistry lab.
2. Determination of heat of neutralization of an acid with a base.
3. Demonstrate the conductivity of different solutions.
4. Demonstrate the electroplating of copper metal on iron strip using copper sulphate solution.
5. Study the reactive strength of cement constituents.
6. Determine the boiling point of Ethyl alcohol.
7. Purification of impure copper sulphate by crystallization.
8. To perform electrolysis of water to produce hydrogen gas and oxygen gas.
9. Determine the concentration of given solution of HCl.
10. Determine the pH of the given solutions.

Recommended Books:

1. Dara, S.S.; A Textbook of Engineering Chemistry (Tenth Edition) ; S.Chand, 2003.

2. Kuriacose, J.; Chemistry in Engineering and Technology (Vol. 1& 2); McGraw Hill, 1984.

3. Barrow, M. Gordon; Physical Chemistry (Fifth Edition); McGraw Hill, 1984.

4. March, Jerry.; Advance Organic Chemistry Reaction Mechanism and Structure (Forth Edition); John Wiley & Sons New York, 2004.

5. W. kemp; Organic spectroscopy (III Edition) PALGRAVE, 2002.

6. Puri B.R., Sharma L.R., Pathania M.S.; Principles of Physical Chemistry; Vishal Publishing Co. (42nd Edition).

7. Instrumental Methods of Analysis by Hobert H.Willard D.L. Merrit & J.R.J.A. Dean, Frank A.Settle; (Latest Edition) Wadsworth Publishing Company.

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Title of Course:	**:**	**Professional Ethics (Th + Pr) (2+ 0)**			
Course Code	**:**	HUM 201			
Semester	**:**	3rd			
Technology	**:**	Civil Engineering Technology			
Effective	**:**	22 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 30% Mid Semester Examination 50% Final Written Examination		N.A	
Credit Hours/week	**:**	**Th**	2	**Pr**	0
Minimum Contact Hours	**:**	**Th**	32	**Pr**	0
Marks	**:**	**Th**	50	**Pr**	0

After Completing the Course, each student will be able to:

Sr. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**To understand** professional ethics and its compliance with particular reference to construction industry and the role of civil technologist.	C2	8
2	Theory	**To analyze** unethical situations/ ethical dilemmas and perform ethical decision making throughout their technology careers in various positions.	C4	12

Relevant Program Learning Outcomes (PLOs):

The course is designed so that students will achieve the following PLOs:

1	Engineering Technology Knowledge:		7	Environment and Sustainability:	
2	Problem Analysis:		8	Ethics:	√
3	Design/Development of Solutions:		9	Individual and Teamwork:	
4	Investigation:		10	Communication:	
5	Modern Tool Usage:		11	Project Management:	
6	The Engineering Technologist & Society:		12	Lifelong Learning:	√

OBJECTIVES:

1. Identify the nature of Professional Ethics in terms of Legal, Historical and Personal definitions

2. Understanding the value of professional ethics

3. Resolving the ethical dilemmas using common ethical values and identifying possible actions to be taken in response

4. Assessing the probable consequences**.**

COURSE OUTLINE:

Fundamentals of Ethics in Profession: Understanding Moral and Ethical values and its significance, the values and behavior drive ethical decision making, Professionalism, Professional Ethics vs. Law, Professional Ethics in organizations, Professional Ethics and Civil Technologist.

Ethical Dilemmas and Decision Making: Methods for ethical decisions, Ethical Dilemmas and Taking Decisions, Conflicts of interest and managing risk, Moral Development Theories, Heinz Dilemma

Professional Ethics in the Context of Construction Industry: Professional Ethics in various phases of Project Life Cycle (such as feasibility, planning, design, procurement, construction, facilities management) with particular emphasis on Professional Ethics pertinent to the Role of Civil Technologists (e.g. technology implementation, customization, new technology development, etc.), Codes of Professional Ethics for Civil Engineers/ Technologists and their Compliance; Professional Ethics of Construction Quality, Safety and Health; Professional Ethics in Procurement; Professional Ethics in Construction Planning, Execution, Coordination, Supervision and Contract Administration; Dispute Resolution in Construction Projects, Rights and Responsibilities such as Collegiality, Collective bargaining, occupational crime, Unionism and Professionalism, Case Studies of Ethical Dilemmas and Good Practice in the Built Environment.

Broader Application of Professional Ethics: Ethical leadership, Professional Ethics in the Global Context of Built Environment, Emerging Topics in Professional Ethics, Ethics in developing Intellectual Properties

RECOMMENDED BOOKS:

1. Professional Ethics for the Construction Industry – Rebecca Mirsky and John Schaufelberger, Routlege, Latest Edition.
2. Ethics for the Built Environment – Peter Fewings, Latest Edition

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