Title of Course:	**:**	**Introduction to Computer Fundamentals (1 + 2)**			
Course Code	**:**	CS123			
Semester	**:**	1st			
Technology	**:**	Civil Engineering Technology			
Effective	**:**	21 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 20% Mid Semester Examination 60% Final Written Examination		40% Sessional Work, ---------- 60% Final Lab. Examination	
Credit Hours/week	**:**	**Th**	1	**Pr**	2
Minimum Contact Hours	**:**	**Th**	16	**Pr**	96
Marks	**:**	**Th**	50	**Pr**	100

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

Sr. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**Identify** the components of a computer system	C1	1
2	Theory	**Describe** the basic knowledge of commonly used computer applications such as Word, Excel, PowerPoint and Visio.	C2	1
3	Practical	**Develop** web pages of using HTML Tag tables, div layout, images , Codes, links, HTML Forms.	P5	5
4	Practical	**Prepare** problem solving skills through the use of flow charts and algorithms and develop small scale computer programs.	P2	5

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 assemble or disassemble computers and plug-in devices, Enable students to design an optimal computer system environment as per need of customer, Pros and cons of

computer business and applications.

COURSE OUTLINE:

- **Basic terminology**:

Computer, user, hardware, software, chip, program,

- **Input**:

Data, instructions (programs, commands, user responses),

- **Output:**

Text, graphics, video, audio,

- **Types of computers:**

Personal, notebook, handheld, PDA, internet appliance, server, mainframe, supercomputer.

- **Types of Programming Languages:**

Generation of computers , Programming languages, Machine, assembly, High-level.

- **Key terms:**

VLSI, microprocessor, microcomputer, Computer Software: Terms: file, menu, font, voice recognition, FAQ, online help, wizard, software suite, single-user license, site license, application window, dialog box, clip art, cross-platform application, Application software, Word processing, Spreadsheet: cell, function, recalculation, charting,

- **C language:**

Introduction to C, Variables and constant, operators, Input/output statement, Decisions, Loops, Functions, Arrays, Pointers.

- **Database:**

Record, field, query, using MS Access/SQL, accounting software,

- **Graphics:**

Computer Aided Design (CAD), desktop publishing, paint/image, multimedia, web authoring,

- **Operating System:**

System software, Operating System (OS), Booting (startup), Cold vs. warm, BIOS, Steps in booting, Utility programs: file viewer, file compression, backup, screen saver, disk scanner, disk defragmenter, Computer hardware, System unit Terms: motherboard, chip, memory, storage, expansion slot (plug and play), port (serial vs. parallel), bus (expansion bus), power supply, Central Processing Unit (CPU), Machine cycle (fetch, decode, execute, store), Memory, Volatile vs. nonvolatile, RAM vs. ROM, Cache, Hard disk, Tracks, sectors, platters, RAID (mirroring and striping), Internet hard drive, Compact disks (and drives), PC Cards, Miniature mobile storage (Compact Flash, Memory Stick, Micro drive, Smart Media),

- **Devices:**

Keyboard, Pointing Devices, Others: trackball, touchpad, pointing stick, light pen, touch screen, stylus, Handwriting recognition software, Sound, Image: Digital camera, Scanners (flatbed, optical readers), Optical readers, Optical character recognition (OCR), bar code scanner, Optical Mark Recognition (OMR), Video: Web cam, PC Video camera, Output Devices, Display device, CRT monitor, Liquid Crystal Display (LCD) – passive versus active matrix, Gas plasma monitor, Printer and its types: Impact printers, Dot matrix printer, Line printer, Plotter, Non-impact printers, Ink-jet, Laser, data projector, fax machine (fax modem), Internet, E- commerce, Ethics and social issues, Privacy and security

PRACTICAL WORK TO BE CARRIED OUT:

1) To know about Computers, their operation and HSE (Health, Safety and Environment) measures.
2) To understand basic machines organization including motherboard, memory, I/O cards, networking devices, Computer peripheral devices
3) To practice Operating Systems, Microsoft Windows
4) To use Microsoft Office i.e. MS Word, MS Power Point, MS Excel.
5) To practice various Office Tools & Overview of different browsers with emphasis on PowerPoint.
6) To use Microsoft Vision
7) To use HTML basics. Create page using HTML.
8) (a) To Practice for Loading & Unloading Turbo C software interface and identify its menu bar.
   (b) To create, edit and save a source program.
   (c) To compile, link and execute a program.
9) To prepare a C-Language program and perform the arithmetic operations by using all
   arithmetic operators. Also print the result on the screen.
10) (a) To prepare a C-Language program to exchange the values of two variables and to print their actual and exchanged values.
    (b) To prepare a C-Language program to input a number calculate the cube of the number and print the result on the screen.
11) (a) To prepare a C-Language program to calculate area of rectangle, when length & width are given.
    (b) To prepare a C-Language program to calculate the area of a circle, when radius and diameter is given.
12) (a) To prepare a C-Language program to input a number if the number is divisible by 3 then print the message on the screen that " the number is divisible by 3" use " block if statement".
    (b) To prepare a C-Language program to perform simple arithmetic operation by using switch statement.
13) To prepare C-Language programs using IF-THEN-ELSE and For Loop statement.
14) To prepare a C-Language program by using an Array.
15) To prepare a C-Language program by calling functions.
16) To perform an open-ended lab.

RECOMMENDED BOOKS:

1) Peter Norton, "Introduction to Computers", Latest Edition
2) Misty E. Vermaat, "Discovering Computers", Shelly Cashman Series, Latest Edition.
3) Robert Lafore ,"Turbo C" ,Latest Edition.

Approval:	Industrial Advisory Board	Res No. 5 (b)	Dated: 01/04/2021
	Board of Studies	Res.No. 3.1	Dated: 10/04/2021
	Board of Faculty	Res.No. : 1.5	Dated: 19/07/2021
	Academic Council	Res.No. : 100.18	Dated: 24/08/2021

Title of Course:	**:**	**Civil Engineering Drawing (1 + 2)**			
Course Code	**:**	CT 113			
Semester	**:**	1st			
Technology	**:**	Civil Engineering Technology			
Effective	**:**	21 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 20% Mid Semester Examination 60% Final Written Examination		40% Sessional Work, ----------, 60% Final Lab. Examination	
Credit Hours/week	**:**	**Th**	1	**Pr**	2
Minimum Contact Hours	**:**	**Th**	16	**Pr**	96
Marks	**:**	**Th**	50	**Pr**	100

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

Sr. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**Understand** the basic knowledge of engineering drawing skills	C2	1
2	Practical	**Apply** the techniques of engineering drawing in architectural drawings of civil engineering structures.	P3	2
3	Practical	**Draw** the structural drawings of various building components	P4	3

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 enable students to learn fundamentals and principles of Engineering Drawing
- To enable students to draw orthographic projections and sections.
- To lean broader aspect of civil engineering drawing.

- To have skills to prepare architectural, structural drawings.

COURSE OUTLINE:

- **Introduction to Engineering Drawing:**
  Isometric drawing, orthographic, projection of points, lines and planes or multi-view drawing, dimensioning, sectioning, different drawing tools and software

- **Architectural Drawing:**
  Typical architectural drawing of a building: (site plan, building elevations, floor plan of each floor, basement plan and roof plan); house emergency floor plan; electrical floor plan ; air conditioning duct floor plan ; plumbing floor plan ; foundation floor plan (footing); foundation floor plan (pile).

- **Structural Drawing**
  Introduction to structural detailing drawings, structural framing plan; Beams; Columns and Foundations; Staircase; Slabs

PRACTICAL WORK TO BE CARRIED OUT:

1) To know about different drawing instruments and their usage in drawing and introduction to HSE measures.
2) To draw Regular Polygons by Universal Method (with given dimensions).
3) To draw Isometric Views of given objects.
4) (a) To draw Isometric View of the given stairs steps.
   (b) To draw Oblique View of the given stairs steps.
5) To draw Oblique View of a Beam resting on two Columns.
6) (a) To draw Development Drawing of a Cube and Cylinder.
   (b) To draw Development Drawing of a Cone.
7) To draw different forms of Rivet Heads.
8) To draw a Plan and section of isolated and combine footing showing reinforcement also draw the Schedule of Footing.
9) To draw a four storied Building Column's elevation and cut section at each floor reducing reinforcement and cross-section of column.
10) To draw Schedule of Beam also draw Typical Elevation of Beam , showing Bottom bar, Extra bottom bar, Hanger bar, Top bar, Extra Top bar, and rings.
11) To draw single span Beam Elevation and its Section showing reinforcement using bent up bar.
12) To draw a three span RCC Beam elevation and its section showing reinforcement also develop Schedule of Beam.
13) To draw a Plan and X-section of single span RCC Slab, showing reinforcement.
14) To draw Plan and X-section of one way slab of three spans showing reinforcement.
15) To draw a Plan of 120 sq. yard residential bungalow.
16) To perform Open-ended lab.

RECOMMENDED BOOKS:

1) Engineering Drawing by N.D. Bhatt (53rd Edition2014) Charotar Publisher (Latest Edition).
2) Drawing for Engineering By Paul Smith (Latest Edition).
3) Basics of Engineering Drawing By Zahid Ahmad Siddique, 2nd Edition, M/S Technical Publisher Lahore (Latest Edition).
4) Civil Engineering Drawing by Gurcharan Singh (Latest Edition).

Approval:	Industrial Advisory Board	Res No.: 5 (b)	Dated: 01/04/2021
	Board of Studies	Res.No. : 3.1	Dated: 10/04/2021
	Board of Faculty	Res.No. : 1.5	Dated: 19/07/2021
	Academic Council	Res.No. : 100.18	Dated: 24/08/2021

Title of Course:	**:**	**Surveying and Leveling (2 + 2)**			
Course Code	**:**	CT 124			
Semester	**:**	1st			
Technology	**:**	Civil Engineering Technology			
Effective	**:**	21 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 20% Mid Semester Examination 60% Final Written Examination		40% Sessional Work, ----------, 60% Final Lab. Examination	
Credit Hours/week	**:**	**Th**	2	**Pr**	2
Minimum Contact Hours	**:**	**Th**	32	**Pr**	96
Marks	**:**	**Th**	50	**Pr**	100

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

Sr. No.	Theory/ Practical	CLO	Taxonomy Level	PLO
1	Theory	**Describe** surveying instruments used in linear and angular measurement for computing the area of plots.	C2	1
2	Theory	**Prepare** the L-section and X-section using the computation of levels.	C3	3
3	Practical	**Practice** various surveying instruments used in linear and angular measurement	P3	5

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:

- To develop an understanding of surveying & leveling theory and practice.
- To develop an ability to translate survey information for design and construction purposes.
- To develop a skill in the use of modern survey instruments.

COURSE OUTLINE:

Introduction:

- Introduction to surveying and its applications
- Theory of errors and Weights: quality of observations, weighted observations, distribution, & adjustment of errors. Most probable value.
- Introduction to leveling, precise leveling, profile leveling, errors and corrections in leveling, plotting L-section and X-section ----Triangulation, trilateration, field procedures and application, EDM, strength of figure, computation and plotting.
- Curves: Various types of curves with application : simple circular curve, compound curves, transition curves, vertical curve and reverse curves,
- Design and layout of curves.
- Tachometry, system of tachometry, applications of tachometer in surveying, computation of horizontal and vertical measurements.
- Hydrographic surveying: Horizontal and vertical controls, sounding and shorelines.
- Introduction to GPS.
- Introduction to remote sensing and GIS in surveying.

PRACTICAL WORK TO BE CARRIED OUT:

1) To learn about the Surveying Lab facilities, precautions for handling the instruments, HSE (Health, Safety and Environment) measures
2) To study and use of conventional instruments & Total Station.
3) To locate various objects by chain surveying and determine offsets
4) To range out the survey line by direct ranging and establish the intermediate.
5) To make temporary adjustment of automatic level and reading of a leveling staff.
6) To practice leveling and computation by collimation and rise and fall method.
7) To perform temporary adjustment of theodolite
8) To determine the horizontal distance between the points by tachometer when the line of sight is straight.
9) To determine the horizontal distance between the points by tachometer when the line of sight is inclined, and staff is held vertical
10) To determine the elements of simple circular curve on the field from collection and analysis of data
11) To determine the elements of reverse curve on the field from collection and analysis of data
12) To determine the elements of composite curve on the field from collection and analysis of data.
13) To perform profile and precise leveling.
14) To determine the elements of vertical curve on the field from collection and analysis of data
15) To measure the horizontal distance between two points on the Sloping Ground by measuring angle of slope
16) To perform Open-ended lab.

RECOMMENDED BOOKS:

1) Surveying Theory and Practice by R. E. Davis, J. Anderson, F.S. Foote, McGraw-Hill (Latest Edition).
2) Surveying by Jack C. Mc Cormac (Latest Edition).
3) Schaum's Outline Series of Introductory Surveying by R. H. Wirshing, Roy Wirshing, Jaews R. Wirshing (Latest Edition).
4) Surveying with Construction Applications by Barry F. Kavanagh, Prentice Hall (Latest Edition).
5) Plane and Geodesic Survey Vol. I and II by David Clarck, Trans-Atlantic Publications (Latest Edition).

Approval:	Industrial Advisory Board	Res No. 5(c)	Dated: 01/04/2021
	Board of Studies	Res.No. 3.2	Dated: 10/04/2021
	Board of Faculty	Res.No. : 1.5	Dated: 19/07/2021
	Academic Council	Res.No. : 100.18	Dated: 24/08/2021

Title of Course:	**:**	**Applied Mechanics (2 + 1)**			
Course Code	**:**	CT 133			
Semester	**:**	1st			
Technology	**:**	Civil Engineering Technology			
Effective	**:**	21 – Batch and onwards			
Pre-requisite	**:**	Nil			
Co-requisite	**:**	Nil			
Assessment	**:**	**Theory**		**Practical**	
	:	20% Sessional Work, 20% Mid Semester Examination 60% Final Written Examination		40% Sessional Work, ----------, 60% 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	**Explain** the two-dimensional Force System and Equilibrium conditions by applying the basic principles of statics.	C2	1
2	Theory	**Apply** the fundamental concepts of kinetics and kinematics to the analysis of a body when subjected to different types of motion.	C3	2
3	Practical	**Demonstrate** the external behavior of bodies subject to force system and equilibrium.	P1	4

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:

- The objectives of this course is to make the student:
- Familiar with all relevant physical properties and fundamental laws governing the behavior of materials and structures

- Understand relationships of physical processes, kinetics, and kinematics. To develop skills to use the basic principles of mechanics in technology applications.

COURSE CONTENTS

- **Introduction to statics:**
  Mechanics: Basic concepts; Scalar and vector; Vector addition, subtraction and product, concept and unit of measurements of mass, force, time, space
- **Force system:**
  Introduction; Two-dimensional force system; Rectangular components; Law of triangle, parallelogram, moment, couple, resultants; solution of problems.
- **Equilibrium:**
  Equilibrium in two dimensions; Equilibrium conditions; free body diagram; solution of problems.
- **Friction:**
  Introduction; Types of friction; Laws of solid friction; Co-efficient of friction, Solution of problems
- **Kinematics of rectilinear and curvilinear motion:**
  Introduction; Displacement; Types of motion; Speed, velocity, acceleration; Equation of motion under uniform acceleration; Normal and tangent acceleration, Solution of problems
- **Work and energy:**
  Work, Energy, Power, Impulse; Momentum; Simple harmonic motion and free vibration.

PRACTICAL WORK TO BE CARRIED OUT:

1) To learn about Mechanics Lab and HSE (Health, Safety and Environment Measures)
2) To determine the resultant of forces.
3) To study the law of moment and equilibrium conditions.
4) To determine the reaction of a simply supported beam through load cell.
5) To determine the tension in the simple cable through load cell.
6) To determine the reaction of a simply supported truss through load cell.
7) To study the projectile motion using photogate.
8) To study acceleration on an inclined plane using photogate.
9) To study Newton's second law of motion.
10) To verify the forces at different members of Jib Crane.
11) To determine the co-efficient of friction between 3 pairs of Rubber Surface, (Wood Glass, Rubber, Leather and Glass).
12) To Determine The Tension In Various Points Of A Hanging Rope Loaded At Different Points.
13) To Determine center of gravity (centroid) of various objects by analytical solution and experimental Observations.
14) To verify the principle of moments.
15) To determine the reaction of a simply supported beam by Experimental Observation (using spring balances), Analytical Solution (using condition of equilibrium) and Graphical Solution (using Funicular Polygon)
16) To perform Open-ended lab.

BOOKS RECOMMENDED:

1. Engineering Mechanics by R.S. Khurmi (Latest Edition).

Approval:	Industrial Advisory Board	Res No. 5(c)	Dated: 01/04/2021
	Board of Studies	Res.No. 3.3	Dated: 10/04/2021
	Board of Faculty	Res.No. : 1.5	Dated: 19/07/2021
	Academic Council	Res.No. : 100.18	Dated: 24/08/2021