LORDS INSTITUTE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institute)
DEPARTMENT OF CIVIL ENGINEERING
SCHEME OF INSTRUCTION & EXAMINATION[LR-23]
(W.e.f Academic Year 2024 – 25)

Course Structure
B.E. III-Semester

S. No.	Course Code	Category	Course Title	Scheme of Instructions				Scheme of Examination			CREDITS
				L	T	P/D	Contact Hours/Week	CIE	SEE	Duration in Hours	
Theory Course											
1	U23MA301	BSC	Mathematics - III	3	1	0	4	40	60	3	4
2	U23CE301	PCC	Strength of Materials - I	3	1	0	4	40	60	3	4
3	U23CE302	PCC	Engineering Geology	2	0	0	2	40	60	3	2
4	U23CE303	PCC	Surveying and Geomatics	3	0	0	3	40	60	3	3
5	U23EE305	ESC	Fundamentals of Electrical Engineering	2	0	0	2	40	60	3	2
Practical / Laboratory Course											
6	U23CE3L1	PCC	Strength of Materials Lab	0	0	0	0	25	50	2	1
7	U23CE3L2	PCC	Engineering Geology Lab	0	0	0	0	25	50	2	1
8	U23CE3L3	PCC	Surveying and Geomatics Lab	0	0	0	0	25	50	3	1.5
Skill Development Course											
9	U23CS3L1	ESC	Programming Language - I	-	-	2	2	50	-	-	1
Total				**13**	**02**	**2**	**17**	**325**	**450**	**22**	**19.5**

L: Lecture (Hrs/Wk/Sem) T: Tutorial (Hrs/Wk/Sem) **P**: Practical **D**: Drawing (Hrs/Wk/Sem)
CIE: Continuous Internal Evaluation **SEE**: Semester End Examination (Univ. Exam)
MC:MandatoryCourse BSC: Basic Science Courses ESC: Engineering Science Courses
PCC: Program Core Courses HSMC: Humanities and Social Sciences Courses
MA: Mathemetics PH: Physics EN: English
CE: Civil Engineering ME: Mechanical Engineering CS: Computer Science

Note:
1. Each contact hour is a Clock Hour.
2. The duration of the practical class is three hours, however it can be extended wherever necessary, to enable the student to complete the experiment.

Course Code **U23MA301**	**Course Title** **MATHEMATICS – III (PDE, P&S)** **(Branch - CIVIL,MECH)**						**Core / Elective Core**
Prerequisite	Contact Hours Per Week				CIE	SEE	Credits
--	L	T	D	P			
	3	1	-	-	40	60	4

Course Objectives

The objective of the course is to:

1. Introduce PDE and solution of first order PDE.
2. Introduce the solution methodologies for second order Partial Differential Equations with applications in engineering
3. Provide an overview of probability and statistics to engineers
4. Obtain the concepts of curve fitting, correlation and test of significance.
5. Acquire the knowledge of Test of Hypothesis pertaining to small and large samples, chi-square for goodness of fit.

Course Outcomes

After completing the course, the student will be able to:

1. Solve field problems in engineering involving first order PDEs.
2. Solve field problems in engineering involving higher order PDEs.
3. Apply the concepts of probability, distributions and moments, kurtosis and skewness indifferent fields
4. Determine the coefficient of correlation, regression and obtain the knowledge of sampling theory with context to test of hypothesis.
5. Analyze and check the validity of statement using testing of hypothesis for various parameters and goodness of fit.

UNIT-I:

Formation of Partial Differential Equations, First order partial differential equations, solutions of first order linear Partial Differentiation Equations, Lagrange's equation, Non-linear First Order equations, Char pit's method.

UNIT-II:

Second-order linear equations and their classification, Method of separation of variables, vibration of stretched string wave equation, one dimensional heat equation, two dimensional heat equation, solution of Laplace's equation.

UNIT-III:

Probability distributions: Poisson, Uniform and Normal distributions, Mean, variance, Moment generating function and evaluation of statistical parameters for these distributions, Moments, Skewness and Kurtosis.

UNIT-IV:

Curve fitting by the method of least squares: Fitting of straight lines, second degree Parabolas and more general curves, Correlation, regression and Rank correlation. Test of Significance: Large sample test for single proportion, difference of proportions, single mean, Difference of means and difference of standard deviation

UNIT-V:

Test for single mean, difference of means and correlation coefficients, test for ratio of Variances, Chi-square test for goodness of fit and independence of attributes.

TEXT BOOKS:

1. R.K.Jain & Iyengar, "Advanced Engineering Mathematics", Narosa Publications.
2. B.S. Grewal, "Higher Engineering Mathematics", Khanna Publishers, 2000.
3. P.Sivaramakrishna Das & C.Vijaya Kumar, "Engineering Mathematics" , Pearson India Education Services Pvt. Ltd.
4. "Engineering Mathematics", MK Venkata Ramana, National Publishing Company

REFERENCE BOOKS:

1. N.P. Bali & M. Goyal, "A Text Book of Engineering Mathematics", Laxmi Publications, 2010.
2. S.C.Gupta & V.K.Kapoor, "Fundamentals of Mathematical Statistics" , S.Chand Pub.
3. P. G. Hoel, S. C. Port & C. J. Stone, "Introduction to Probability Theory", Universal Book Stall, 2003.
4. W. Feller, "An Introduction to Probability Theory and its Applications", Vol. 1, Wiley,

Course Code	Course Title						Core / Elective
U23CE301	Strength of Materials-I						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
ENGINEERING MECHANICS	3	1	0	4	40	60	4

Course Objectives

The objectives of this course is to impart knowledge of and problem solving skills in

1. Concepts of the stress and strain for different materials and application to longitudinally stressed bars
2. Evaluating shear forces and bending moments in beams, pure bending theory and determination of the bending stresses in beams
3. Determining the stresses for the shearing stresses, combined action of direct load and bending moment
4. Pure torsion theory and application to different types of springs.
5. Evaluating principal stresses in multi-axially loaded members, applications in estimating the best failure criteria in solid materials and evaluation of stresses & strains in thin-walled pressure vessels

Course Outcomes

After Completion of this course, the student will be able to

1. Apply the fundamental concepts of stress and strain in the analysis and design of axially loaded members.
2. Analyze determinate beams to determine shear forces, bending moments and determine the bending stress distribution in beams.
3. Determine the shear stress distribution in beams and also the stresses in beams subjected to combined axial and bending loads.
4. Evaluate the stresses and strains of circular members subjected to torsion and calculate the power required for torsional revolutions of shafts.
5. Analyze the combined stresses at a point to evaluate principal stresses, and their applications in evaluating failure criteria in various materials and pressure vessels

UNIT – I

Simple Stresses and Strains: Definitions of stresses and strains, Hooke's Law, Modulus of Elasticity, Stress - Strain curve for ductile materials, Elastic constants, compound bars and temperature stresses.

Strain Energy: Strain energy and resilience in statically determinate bars subjected to gradually applied, suddenly applied, impact and shock loads.

UNIT – II

Shear Force and Bending Moment: Different types of supports beams and loads, shear force and bending moment diagrams for cantilever, and simply supported beams with and without overhangs subjected to different kinds of loads viz. , point loads, uniformly distributed loads, uniformly varying loads and couples.

Bending Stresses in Beams: Assumptions in theory of simple bending, Derivation of flexure equation, Moment of resistance, calculation of stresses in statically determinate beams for different loads and different types of structural sections.

UNIT – III

Shear Stress in Beams: Derivation of equation of shear stresses, distribution across rectangular, circular, T and I section.

Direct and Bending Stresses: Direct loading, Eccentric loading, limit of eccentricity, Core of sections, rectangular and circular, solid and hollow sections.

Thin Cylinders: Thin seamless cylindrical shells – Derivation of formula for longitudinal and circumferential stresses – hoop, longitudinal and volumetric strains – changes in dia, and volume of thin cylinders.

Thick Cylinders: Introduction - Lame's theory for thick cylinders – Derivation of Lame's formulae – distribution of hoop and radial stresses across thickness – design of thick cylinders – compound cylinders – Necessary difference of radii for shrinkage.

UNIT – IV

Torsion of circular shaft: Theory of pure torsion in solid and hollow circular shafts, shear stress, angle of twist, strength and stiffness of shafts, Transmission of Power. Determination of principal stresses and maximum shear stress.

Springs: Close and open coiled helical springs under axial load and axial twist, Carriage springs.

UNIT – V

Principal Stresses: Introduction – Stresses on an oblique plane of a bar under axial loading, compound stresses, Normal and tangential stresses on an inclined plane for biaxial stresses, two perpendicular normal stresses accompanied by a state of simple shear, Principal stresses, and Mohr's circle of stresses, Analytical and graphical solutions.

Text Books:

1. Dr. R.k Bansal, A text book of strength of materials, Laxmi publication (P) Ltd. sixth edition.
2. D.S. Prakash Rao, Strength of Materials-A Practical Approach, Universities Press,1999.
3. R.K. Rajput, A Textbook of Strength of Materials, S.Chand Publications,2007
4. R. Subramanian, Strength of Materials, Oxford University Press, NewDelhi2005.

References:

1. S.S. Bhavikatti, Strength of materials, Vikas PublishingHouse,2002
2. Ferdinand P Beer, Johnston and De Wolf., Mechanics of Materials, Tata McGraw-Hill, 2004.
3. Dr, B.C punmia ,Dr.Ashok kumar jain and Dr.arun kumar jain, mechanics of materials.
4. S.Ramamrutham and R Narayanan, a text book of strength of materials,Dhanpathrai publishing company.
5. R.C Hibbler, A text book of Mechanics of materials, Prentice Hall Publications.
6. T.D Gunneswara Rao and M.Andal, A text book of strength of materials, Cambridge Publishers.
7. B.S.Basavarajaiah and P.Mahadevappa, A text book of strength of materials, 3 rd Edition, Universities press.

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Course Code	Course Title						Core / Elective
U23CE302	Engineering Geology						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
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Course Objectives

The objectives of this course is to:

1. Mineralogy, rock formation & types and geological structures
2. Rock weathering, formation & classification of soils
3. Geomorphologyand rock mechanics
4. Utility of rocks as a construction material with qualifying properties
5. Geological problems associated with dams, reservoirs, tunnels and other geological hazards

Course Outcomes

After Completion of this course, the student will be able to

1. Identify various minerals, rocks and analyse geological structures.
2. Explain rock weathering, classify various soils and understand hydrogeology.
3. Classify landforms based on their geomorphology and evaluate the engineering properties of rocks.
4. Examine rocks for their suitability in various construction applications.
5. Investigate and identify the geological problems in dams, reservoirs and tunnels, and explain the geological causes of earthquakes, tsunamis and landslides.

UNIT – I

Introduction: Engineering geology useful to civil engineering

Mineralogy: Mineral, Origin and composition. Physical properties of minerals, susceptibility of minerals to weathering, Rock forming minerals.

Rocks: Igneous, sedimentary and metamorphic rocks Geological description and Indian occurrence of Granite, Basalt, Dolerite, Gabbro, Laterite, Sandstone Shale, Limestone Slate, Gneiss, Quartzite, Marble, Khondalite and chamockite. **Geological Structures**: Folds, joints and faults: Fundamental types, mechanism origin and classification; Field identification and Engineering analysis of geological structures

UNIT – II

Rock Weathering: Processes and end-products of weathering; susceptibility of rocks to weathering, Assessment of the degree of weathering and its classification. Geology of Soils: Formation, geological classification, description and Engineering use of soils Types of Indian soils. Hydrogeology: Hydrologic cycle, water table, aquifers, occurrence of ground water in various lithological formations, geological control for ground water movement, springs, ground water exploration and ground water provinces of India.

UNIT – III

Geomorphology: Evolution, characteristics features and Engineering, considerations of fluviatile, Aeolian, glacial and marine land forms. Rock Mechanics: Engineering properties of rocks Stress-Strain behaviour of rocks. Site Investigation: Aerial Photographs, Electrical: Resistivity and Seismic refraction methods.

UNIT – IV

Rock as a Construction Material: Geological considerations for the selection of Concrete aggregate, Highway and Runway aggregates, building stones, Decorative stones, Roofing and facing stones. Geology of Dams and Reservoirs: Types of Dams, Problems associated with Dam foundations and reservoirs, Engineering Geological investigations for demand water tightness in reservoir site, Analysis of dam failure; Engineering Geology of major Dam sites of India

UNIT – V

Tunnels: Stand-up time of different rocks, Engineering Geological investigations of tunnels in rock, problems in tunnelling. Geological Hazards: Geological aspects of Earthquakes, Tsunamis and Landslides;

Text Books:

1. F.G. Bell, Engineering Geology, Elsevier, 2007.
2. Dimitri P. Krynine and William R. Judd, Principles of Engineering Geology & Geotechnics, CBS Publishers & Distributors, First Edition, 1998.
3. B.P. Attewel and I.W. Fanner, Principles of Engineering Geology, Chapman and Hall 1976.
4. Officers of the Geological Survey of India, Engineering Geology Case Histories, Miscellaneous Pub. No. 29, 1975
5. K.N Radhika and B.C Prabhakar ,A textbook on Engineering geology, walnut publication

References:

1. Abramson, L. W., Lee, T. L., Sharma, S., & Boyce, G. M. (2015). Slope stability and stabilization methods. New York, NY: John Wiley and Sons.

2. American Society of State Highway and Transportation Officials, Inc. (1988). Manual on subsurface investigations. Washington, DC.
3. Bieniawski, Z. T. (2007). Engineering rock mass classifications. New York: John Wiley and Sons.
4. Cornforth, DH. (2005). Landslide in practice: Investigation, analysis, and remedial/preventative options in soils. Hoboken, NJ: John Wiley and Sons.
5. Rock Foundations. (2017). American Society of Civil Engineers. EM 1110-1-2908, p. 8-1 through 8-16
6. Ragan, D. M. (2018). Structural geology. New York: John Wiley and Sons, p. 3.
7. Price, DG (Ed.).(2008). Engineering Geology, Principles and Practice. New York: Springer

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Course Code	Course Title						Core / Elective
U23CE303	SURVEYING & GEOMATICS						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
Mathematics-1	3	-	-	3	40	60	3

Course Objectives

The objectives of this course is to:

1. To study the basic concept and principle of surveying.
2. To know the field applications and concepts of leveling survey and cotouring.
3. Study the basic concepts and trigonometric leveling and field applications.
4. Know the principle of aerial photogrammetry and its applications.
5. Study the various application of GPS and Remote sencing.

Course Outcomes

After Completion of this course, the student will be able to

1. **Understand the basic principles of Surveying**
2. Computation of lengths, areas, bearings of given field work
3. Understand the basic working principles of theodolite and total station
4. Computation of setting out data for horizontal and vertical curves by various methods.
5. Understand the basic concepts related to Photogrammetry, RS and GPS
6. Application of various methods of surveying.

UNIT – I

Introduction and Basic Principles of Surveying Concepts of surveying, principles of surveying, various classifications of surveying. Chain survey- Concepts of survey lines offsets. Errors in chain survey. Measurement of area - Simpson's method, average ordinate, mid ordinate and trapezoidal rules. Basics of compass survey and plane table survey- accessories and methods.

UNIT – II

Leveling and Contours Definition of leveling, terms used in leveling. Instruments of leveling, methods of booking levels, Height of Instrument and Rise and fall methods. Concepts of balancing levels. Types of leveling, reciprocal leveling, profile leveling, precise leveling. Correction to refraction, errors in leveling. Definition of contours Characteristics of contours, contour interval, methods of contouring-direct and indirect. Development and use of contour maps

UNIT – III

Theodolite Surveying: Types of Theodolites, Fundamental Lines, temporary adjustments, measurement of horizontalangle by repetition method and reiteration method, measurement of vertical Angle, Trigonometrical leveling when base is accessible and inaccessible.

Traversing: Methods of traversing, traverse computations and adjustments, Gale's traverse table, Omitted measurements.

UNIT – IV

Tacheometric Surveying: Principles of Tacheometry, stadia and tangential methods of Tacheometry.

Curves: Theory of simple curves, setting out of simple curves by linear and angular methods, Elements of simple compound curve & Reverse curve, Elements of Transition curve, Length of transition curve, Vertical Curves, Types of vertical curves, Length of vertical curve. Uses of curves

UNIT – V

Modern Surveying Methods: Total Station and Global Positioning System: Basic principles, classifications, applications, comparison with conventional surveying. Electromagnetic wave theory - electromagnetic distance measuring system - principle of working and EDM instruments, Components of GPS – space segment, control segment and user segment, reference systems, satellite orbits, GPS observations. Applications of GPS.

Text Books:

1. B.C.Punmia, Vol 1,2 &3,Lakshmi Publisher, New Delhi,1994
2. Arora K.R, Vol 1,2 &3,Standard Book House, New Delhi,2005
3. Surveying & Levelling, 2/E—Subramanian—Oxford University Press
4. Surveying and Levelling Vol. II by T. P. Kanetkar and S. V. Kulkarni Pune Vidyarthi Publication.

References:

1. T.M lillesand and R.W. Kiefer Remote sensing and Image Interpretation, John Wiley &Sons 1994
2. Anji Reddy, M., .Remote Sensing and Geographical Information System, B.S Publications,2001.
3. Remote sensing and Geographical Information System, By A. M. Chandra and S. K. Ghosh, Narosa PublishingHouse
4. Remote Sensing & GIS,2/E—Bhatta– Oxford University Press
5. GPS Satelite Surveying—Alfred Leick—Wiley

Course Code	Course Title						Core/Elective
U23EE305	FUNDAMENTALS OF ELECTRICAL ENGINEERING						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
	L	T	D	P			
ENGINEERING PHYSICS	2	-	-	-	40	60	2

Course Objectives

The objectives of this course is to:

1. To provide an understanding of basics in Electrical circuits.
2. To explain the working principles of Electrical Machines and single phase transformers.
3. To know the electrical installation and concepts of batteries
4. To explain about converters and their applications in electrical circuits.

Course Outcomes

After the completion of the course, the student will be able to:

1. To analyze Electrical circuits to compute and measure the parameters of Electrical Energy.
2. To comprehend the working principles of Electrical DC Machines.
3. To Identifyand test various Electrical switchgear, single phase transformers and assess the ratings needed in given application.
4. To comprehend the working principles of electrical AC machines.
5. To understand thedifferent electrical installations, batteries and working and applications of converter and inverter circuits.

UNIT-I

DC Circuits: Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff current and voltage laws, Analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems.

UNIT-II

AC Circuits: Representation of sinusoidal waveforms, Peak and rms values, Phasor representation, Real power, Reactive power, Apparent power, Power factor. Analysis of single-phase ac circuits consisting of R, L, C, and RL, RC, RLC combinations (series only), Three phase balanced circuits, Voltage and current relations in star and delta connections.

UNIT-III

Transformers: Electromagnetic induction, Faradays laws, Statically induced emf, Lenz law, Construction and working of transformer, Losses and efficiency, Auto transformers.
DC Generators: Dynamically induced emf, Construction and principle of operation of DC generator, Emf equation, Types of DC Generators, Applications.
DC Motors: Principle of operation of DC Motor, Types of DC motors, Applications.

UNIT-IV

AC Machines:
Synchronous Machines: Alternators: Construction, Working and applications. Synchronous motors: Construction, Working and applications.
Asynchronous Machines: Construction, Working and applications.

UNIT-V

Electrical Installations: Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries, Elementary calculations for energy consumption, Power factor improvement and battery backup.
Basic Converters: Working of rectifier and inverter circuits.

Suggested Readings:

1. B. Theraja, "A Textbook of Electrical Technology: Volume 2 AC and DC Machines", Publisher: S Chand; TwentyThird edition, 2020
2. N.K. De, "Basic Electrical Engineering", Universities Press, 2015.
3. J.B. Gupta, "Fundamentals of Electrical Engineering and Electronics", S.K. Kataria & Sons Publications, 2012.
4. M. H. Rashid, "Power electronics: circuits, devices, and applications", Pearson Education India, 2017.

Course Code	Course Title						Core / Elective
U23CE3L1	Strength of Materials Lab						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
Engineering Mechanics Lab	0	0	0	2	25	50	1

Course Objectives

The objectives of this course is to:

1. Draw the stress-strain diagram for mild steel.
2. Conduct the Tension test, Compression test on various materials.
3. Perform the Shear test, bending test on determinate beams.
4. Conduct the Compression test on spring and Hardness test using various machines.
5. Execute the Torsion test, Impact test on various materials.

Course Outcomes

After Completion of this course, the student will be able to

1. Determine the tensile strength of a steel specimen and draw the stress-strain curve.
2. Determine the hardness of various metals using brinell's hardness testing machine.
3. Evaluate the compressive strength of brick using UTM.
4. Determine the modulus of elasticity of steel and timber by conducting bending test.
5. Assess the modulus of rigidity of steel specimen by using torsion testing machine.

List of Experiments:

1. Uni-axial tension test on a specimen of ductile material.
2. Stress–Strain characteristics of a ductile material.
3. Brinell`s hardness test.
4. Compression test on brick.
5. Bending test on simply supported beam of Timber.
6. Izod impact test and Charpy impact test.
7. Compression test on close coiled helical spring.
8. Torsion test on a specimen of ductile material.
9. Bending test on Cantilever beam of Steel.
10. Bending test on simply supported beam of Steel.
11. Shear test on mild steel.

Suggested Readings:

1. D.S. Prakash Rao, Strength of Materials-A Practical Approach, Universities Press,1999.
2. R.K. Rajput, A Text book of Strength of Materials, S. Chand Publications,2007.
3. R. Subramanian, Strength of Materials, Oxford University Press, New Delhi2005.
4. S.S. Bhavikatti, Strength of materials, Vikas Publishing House,2002.
5. Ferdinand P Beer, Johnston and De Wolf., Mechanics of Materials, Tata McGraw-Hill, 2004.

Course Code	Course Title						Core / Elective
U23CE3L2	Engineering Geology Lab						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
	0	0	0	3	25	50	1

Course Objectives

The objectives of this course is to:

1. This course gives a practical hands-on experience to students to study.
2. Evaluate the physical and engineering properties of minerals and rocks.
3. Provides exposure to various geological tests
4. Identify the minerals based on their physical properties by simple tests
5. Interpret the geological structures in the geological maps and models.

Course Outcomes

After Completion of this course, the student will be able to

1. Identify the physical and engineering properties of minerals and rocks.
2. Analyse and measure structural aspects of rocks using models .
3. Carryout field experiment and studies such as VES
4. Perform studies such as Stereoscopic study of photographs, seismic refraction survey and Slake durability test
5. Study the topographical and GSI maps

List of Experiments:

1. Identification and description of physical properties of minerals
2. Identification and description of geological and geotechnical characteristics of rocks
3. Determination of apparent specific gravity, porosityand water absorption of different rocks
4. Study of structural geology models (wooden models)
5. Measurement of dip of planar feature byclinometers compass
6. Vertical electrical sounding VES field experiment
7. Stereoscopic study of aerial photographs pertaining to landforms, vegetation and water bodies
8. Study of topographical maps
9. Structural geologyproblems (strike, dip, three point problems)
10. Study of geological survey of India (GSI works) maps and reports

Suggested Readings:

1. F.G. Bell, Engineering Geology, Elsevier, 2007.
2. Dimitri P. Krynine and William R. Judd, Principles of Engineering Geology & Geotechnics, CBS Publishers & Distributors, First Edition, 1998.
3. B.P. Attewel and I.W. Fanner, Principles of Engineering Geology, Chapman and Hall 1976.
4. Officers of the Geological Survey of India, Engineering Geology Case Histories, Miscellaneous Pub. No. 29, 1975

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Course Code	Course Title					Core / Elective
U23CE3L3	SURVEYING & GEOMATICS LAB					Core
Prerequisite	Contact Hours per Week			CIE	SEE	Credits
	L	T	D/P			
SURVEYING & GEOMATICS	-	-	-	25	50	1.5

Course Objectives

The objectives of this course is to:

1. To Study and understand the different methods in Survey field
2. To Study the basic concept of trignometrical leveling, and field applications .
3. To analyze the Curves for Survey work related to Roads and Railways .

Course Outcomes

After Completion of this course, the student will be able to

1. Compute lengths, areas and bearings of the given field work
2. Understand the basic working principles of theodolite and total station.
3. Compute setting out data for setting out of horizontal curves by various methods
4. Computation of setting out data for horizontal and vertical curves by various methods
5. Understand the basic concepts related to Photogrammetry, RS and GPS

List of Experiments:

1. Chain Survey: Study of chains, Setting out works, Chaining and Marking Perpendicular offset.
2. Compass Traversing – Measuring Bearings & arriving included angles.
3. Radiation method, intersection methods by plane table survey.
4. Introduction to levelling - Fly levelling using Auto level.
5. Development of L.S. and C.S after obtaining levels by using Auto levels.
6. Measurement of Horizontal and vertical angle by theodolite.
7. Trigonometric leveling using theodolite.
8. Determination of height, remote elevation, distance between inaccessible points using total station.
9. Determination of Area using total station and drawing map.
10. Traversing using total station for drawing contour map
11. Stake out using total station
12. Setting out Curve using total station.

Text Books:

1. Surveying and Levelling Vol. I and Vol. II by T. P. Kanetkar and S.V.Kulkarni , Pune Vidyarthi Griha Prakashan.
2. Surveying and Levelling by Subramanian, Oxford University Press.

Suggested Readings:

1. Surveying, Vol. I & II by Dr. B. C. Punmia, Ashok K. Jain, ArunK. Jain , Laxmi Publications

ANNEXURE-V

Course Code	Course Title						Core/Elective
U23CS3L1	PROGRAMMINGLANGUAGE-I						Core
Pre-requisites	Contact Hours Per Week				CIE	SEE	Credits
PPS	L	T	D	P			
	-	-	-	2	25	50	1

Course Objectives:

The objectives of this course is to:

1. To write, test, and debug simple Python programs.
2. To implement Python programs with conditionals and loops.
3. Use functions for structuring Python programs.
4. Represent compound data using Python lists, tuples, and dictionaries.
5. Read and write data from/to files in Python.

Course Outcomes

After completing this course, the student will be able to:

1. Write, test, and debug simple Python programs.
2. Implement Python programs with conditionals and loops.
3. Develop Python programs step-wise by defining functions and calling them.
4. Use Python lists, tuples, dictionaries for representing compound data.
5. Read and write data from/to files in Python.

List of Programming Exercises:

1 a) Write a python program for python variables, Executing python from the command line, editing python files, Python reserved words.

b) Write a python program to add two numbers.

c) Write a program to demonstrate different number data types in python.

d) Write a program to perform different arithmetic operations on numbers in python.

2. a) Write a python program to print a number is positive/negative using if-else.

b) Write a python program to find largest number among three numbers.

c) Write a python program to swap two variables

d) Python program to print all prime numbers in an interval

3. a) Write a python program to check whether the given string is palindrome or not.

b) Write a program to create, concatenate and print a string and accessing substring from a given string.

c) Functions: Passing parameters to a Function, Variable Number of Arguments, Scope, and Passing Functions to a Function.

4. a) Create a list and perform the following methods

1) insert () 2) remove() 3) append() 4) Len( ) 5) pop() 6) clear()

b) Create a dictionary and apply the following methods

1) Print the dictionary items 2) access items 3) useget() 4) change values 5) uselen()

c) Create a tuple and perform the following methods

1) Add items 2) Len() 3) check for it in tuple 4) Access items

5. a) OOP concepts: Classes, File Organization, Special Methods, Inheritance, Polymorphism, Special Characters, Character Classes, Quantifiers, Dot Character, Greedy Matches, Matching at Beginning or End,Match Objects, Compiling Regular Expressions.

b) Write a python Program to call data member and function using classes and objects

6. a) Write a program to double a given number and add two numbers using lambda()
   b) Write a program for filter () to filter only even numbers from a given list.
   c) Write a Python Program to Make a Simple Calculator.
7. a) Demonstrate a python code to print try, except and finally block statements
   b) Write a python program to open and write "hello world" into a file and check the access permissions to that file?
   c) Python program to sort the element so fan array in ascending order and descending order.
8. a) Write a python program to open a file and check what are the access permissions acquired by that file using osmodule.
   b) Write a program to perform basic operations on and ommodule.
9. Write a python program to practice some basic library modules
   a) numpy
   b) scipy
10. Introduction to basic concept of GUI Programming and Develop desktop based application with python basic Tkinter() Module?

Suggested Reading:

1. Gerald J.Kowalski, Mark T.Maybury: Information Storage and Retrieval Systems: Theory and Implementation, Second Edition Kluwer Academic Publishers
2. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall,1992.
3. Modern Information Retrival ByYates Pearson Education.
4. Information Storage & Retrieval By Robert Korfhage– John Wiley & Sons.