

Syllabus-2023-2024

(SOET)(BTech-CivilEngineering)

| | | | | | | | | |
|--|--|-----------------|--------------------|---|---|---|---|---|
| Title of the Course | Fluid Mechanics | | | | | | | |
| Course Code | CEL0406[T] | | | | | | | |
| Part A | | | | | | | | |
| Year | 2nd | Semester | 4th | Credits | L | T | P | C |
| | | | | | 2 | 1 | 1 | 4 |
| Course Type | Embedded theory and lab | | | | | | | |
| Course Category | Discipline Core | | | | | | | |
| Pre-Requisite/s | subject knowledge of engineering mechanics and physics | | | Co-Requisite/s | | | | |
| Course Outcomes & Bloom's Level | <p>CO1- • CO1: To remember the various concepts of fluid mechanics(BL1-Remember)</p> <p>CO2- • CO2: To understand & analyze the different fluid flow problems.(BL2-Understand)</p> <p>CO3- • CO3: To implement the different designing concepts of fluid mechanics.(BL3-Apply)</p> <p>CO4- • CO4: To provide experimental basis ,and to enable the students to analyze the behaviour of various in fluids and its characteristics.(BL4-Analyze)</p> <p>CO5- • CO5: To evaluate the applications of fluids in various fields such as research&industries.(BL4-Analyze)</p> <p>CO6- • CO6: To apply the understanding of fluids in identifying the fluids and its different types.(BL2-Understand)</p> | | | | | | | |
| Courses Elements | Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗ | | SDG (Goals) | SDG11(Sustainable cities and economies) | | | | |

Part B

| Modules | Contents | Pedagogy | Hours |
|---------|---|---|-------|
| Unit-1 | Characteristics of fluids; continuum concepts; physical properties – bulk modulus; cohesion and adhesion; vapor pressure; surface tension; Newton's Law of viscosity – Newtonian and Non-Newtonian fluids; Pascal's law; pressure variation; scales and methods of pressure measurement; forces acting on plane and curve surfaces; stability of floating and submerged bodies. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| Unit-2 | Kinematics of Flow : Types of flow-ideal & real , steady & unsteady, uniform & non-uniform, one, two dimensional flow, path lines, streak lines, streamlines and stream tubes; continuity equation for one dimensional flow, rotational & irrotational flow, circulation, stagnation point, separation of flow, sources & sinks, velocity potential, stream function, flownets & Utility. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| Unit-3 | Dynamics of Flow: Euler's equation of motion along a streamline and derivation of Bernoulli's equation, application of Bernoulli's equation, energy correction factor, linear momentum equation for steady flow; momentum correction factor. The moment of momentum equation. Forces on fixed and moving vanes and other applications. Fluid Measurements: Velocity measurement (Pitot tube, current meters etc); flow measurement (orifices, nozzles, mouth pieces, venturimeter). | Lectures with problem based learning, experimental learning, case study, field trips, | 10 |
| Unit-4 | Laminar Flow: Introduction to laminar & turbulent flow, Reynolds experiment & Reynolds number, relation between shear & pressure gradient, laminar flow through circular pipes, laminar flow between parallel plates, laminar flow through porous media, Stokes law, lubrication principles, Major & minor head losses in pipe. | Lectures with problem based learning, experimental learning, case study, field trips, | 8 |
| Unit-5 | Dimensional Analysis: Introduction, dimensional homogeneity, use of Buckingham-pi theorem, calculation of dimensionless numbers, application of similarity laws to model & prototype. Machines: Introduction to different types of turbines and Pumps Pelton, Francis and Kaplan Turbine, Centrifugal Pumps: Reciprocating Pump | Lectures with problem based learning, experimental learning, case study, field trips, | 10 |

Part C

| Modules | Title | Indicative-ABCA/PBL/ Experiments/Field work/ Internships | Bloom's Level | Hours |
|---------|--|--|----------------|-------|
| 2 | To determine Cv, Cc and Cd for orifice meter | Experiments | BL3-Apply | 3 |
| 3 | To determine Cv, Cc and Cd for venturi meter | Experiments | BL2-Understand | 3 |
| 4 | Find the losses due to friction in pipe | Experiments | BL4-Analyze | 3 |
| 5 | Find the losses due to pipe fitting. | Experiments | BL2-Understand | 3 |
| 6 | Find the Cd for Nozzle meter. | Experiments | BL3-Apply | 3 |
| 7 | Find the meta-centric height. | Experiments | BL2-Understand | 3 |

Part D(Marks Distribution)

| Theory | | | | | |
|-------------|-----------------------|---------------------|--------------------------|---------------------|--------------------------|
| Total Marks | Minimum Passing Marks | External Evaluation | Min. External Evaluation | Internal Evaluation | Min. Internal Evaluation |
| 100 | 40 | 40 | 12 | 60 | |
| Practical | | | | | |
| Total Marks | Minimum Passing Marks | External Evaluation | Min. External Evaluation | Internal Evaluation | Min. Internal Evaluation |
| 100 | 40 | 40 | 12 | 60 | 0 |

Part E

| | |
|-------------------------|---|
| Books | Dr. R.K. Bansal |
| Articles | https://books.google.co.in/books?id=0clZbfgiyUC&printsec=copyright&redir_esc=y#v=onepage&q&f=false |
| References Books | Modi and Seth |
| MOOC Courses | https://www.mooc-list.com/tags/fluid-mechanics#google_vignette |
| Videos | https://www.youtube.com/watch?v=PgKsr2_-oxc |

Course Articulation Matrix

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 3 | 1 | 1 | 1 | 2 | 2 | - | - | 3 | 3 | - | - | 3 | 3 | 2 |
| CO2 | 3 | 1 | 2 | 2 | 3 | 1 | - | 1 | 3 | 3 | - | - | 3 | 3 | 1 |
| CO3 | 1 | 1 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - |
| CO4 | 1 | 2 | 3 | 2 | 2 | - | 3 | 2 | - | - | 2 | 1 | 3 | 2 | 2 |
| CO5 | 1 | 1 | 1 | 2 | - | 1 | - | - | - | - | - | - | - | - | - |
| CO6 | 1 | 2 | 1 | 1 | 1 | - | - | - | - | - | - | - | - | - | - |



Syllabus-2023-2024

(SOET)(BTech-CivilEngineering)

| | | | | | | | |
|--|---|-----------------|--------------------|-----------------------|---|---|---|
| Title of the Course | Fundamentals of Surveying | | | | | | |
| Course Code | CEL0407[T] | | | | | | |
| Part A | | | | | | | |
| Year | 2nd | Semester | 4th | Credits | L | T | P |
| | | | | | 3 | 1 | 2 |
| Course Type | Embedded theory and lab | | | | | | |
| Course Category | Discipline Core | | | | | | |
| Pre-Requisite/s | subject knowledge of linear measurement, geometry | | | Co-Requisite/s | | | |
| Course Outcomes & Bloom's Level | <p>CO1- • CO1:To remember the various concepts of surveying.(BL1-Remember)</p> <p>CO2- • CO2:To understand & analyze the horizontal vertical & inclined measurements. (BL2-Understand)</p> <p>CO3- • CO3:To implement the different instrumentation techniques.(BL3-Apply)</p> <p>CO4- • CO4: To provide experimental basis,and to enable the studentstoanalyzetheRLs of different levels.(BL4-Analyze)</p> <p>CO5- • CO5:To evaluate the land areas & volume of earth work.(BL5-Evaluate)</p> <p>CO6- • CO6: To apply the understand inglocation of of fininte points (BL2-Understand)</p> | | | | | | |
| Coures Elements | Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professsonal Ethics ✗ Gender ✗ Human Values ✗ Environment ✗ | | SDG (Goals) | | | | |

Part B

| Modules | Contents | Pedagogy | Hours |
|---------|--|--|-------|
| 1 | Principles and classifications of surveying, chain surveying- basic concepts, terminology and instruments used. Plane table surveying: Principle, methods and equipments, two and three point problems and their solutions Leveling: Principle, terminology and instrumentation, booking of leveling readings, reduction of levels, profile leveling, cross-sectioning and reciprocal leveling. Contouring | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 2 | Traversing by Compass: different types of bearings and their measurement systems, Different types of compasses for the measurement of bearings, compass traversing and closing error and its adjustments. Traversing by theodolite, Field work checks, traverse computations, latitude and departures, plotting & adjusting of traverse, omitted measurements. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 3 | Tachometry: Tachometric systems and principles, uses of anallatic lens, tangential system, subtense system, instrument constant, field work reduction, direct-reading tachometers, use of tachometry for traversing and contouring. Trigonometrical leveling. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 4 | Curves: Classification and use; elements of circular curves, calculations, setting out Curves by offsets and by theodolites, compound curves, reverse curves, transition curves, Vertical curves Introduction to DGPS | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 5 | Control Surveys: Providing frame work of control points, triangulation principle, Reconnaissance, selection and marking of stations, angle measurements and corrections, baseline Measurement and corrections, computation of sides, precise traversing, Introduction & principles of hydrographic survey. | Lectures with problem based learning, experimental learning, case study, field trips | |



Part C

| Modules | Title | Indicative-ABCA/PBL/ Experiments/Field work/ Internships | Bloom's Level | Hours |
|---------|--------------------|--|----------------|-------|
| 1 | chain surveying | Experiments | BL3-Apply | 3 |
| 2 | compass surveying | Experiments | BL3-Apply | 3 |
| 3 | dummy level | Experiments | BL2-Understand | 3 |
| 4 | plane table survey | Experiments | BL2-Understand | 3 |
| 5 | auto level survey | Experiments | BL3-Apply | 3 |

Part D(Marks Distribution)

| Theory | | | | | |
|-------------|-----------------------|---------------------|--------------------------|---------------------|--------------------------|
| Total Marks | Minimum Passing Marks | External Evaluation | Min. External Evaluation | Internal Evaluation | Min. Internal Evaluation |
| 100 | 40 | 40 | 12 | 60 | |
| Practical | | | | | |
| Total Marks | Minimum Passing Marks | External Evaluation | Min. External Evaluation | Internal Evaluation | Min. Internal Evaluation |
| 100 | 40 | 40 | 12 | 60 | 0 |

Part E

| | |
|-------------------------|---|
| Books | N.N. Basak |
| Articles | https://books.google.co.in/books/about/Surveying_Vol_I.html?id=EM-sLyVmMwIC&redir_esc=y |
| References Books | Dr. B.C. Punmia |
| MOOC Courses | https://www.mooc-list.com/tags/surveys |
| Videos | https://www.youtube.com/watch?v=chhuq_t40rY |

Course Articulation Matrix

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 1 | 2 | 3 | 1 | 3 | 2 | 2 | 2 | 1 | 1 | - | - | 3 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 3 | - | 3 | 3 | 1 |
| CO3 | 1 | 1 | 1 | 2 | 1 | - | - | - | - | - | - | - | - | - | - |
| CO4 | 1 | 2 | 3 | 1 | 3 | 3 | 3 | 2 | 1 | 2 | - | 2 | 3 | 3 | 1 |
| CO5 | 1 | 1 | 1 | - | 2 | - | - | - | - | - | - | - | - | - | - |
| CO6 | 1 | 1 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - |



Syllabus-2023-2024

(SOET)(BTech-CivilEngineering)

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|--|--|-----------------|--------------------|---|---|---|---|---|
| Title of the Course | Fundamentals of Geotechnical Engineering | | | | | | | |
| Course Code | CEL0408[T] | | | | | | | |
| Part A | | | | | | | | |
| Year | 2nd | Semester | 4th | Credits | L | T | P | C |
| | | | | | 3 | 1 | 1 | 5 |
| Course Type | Embedded theory and lab | | | | | | | |
| Course Category | Discipline Core | | | | | | | |
| Pre-Requisite/s | basic knowledge of soil and its properties | | | Co-Requisite/s | | | | |
| Course Outcomes & Bloom's Level | <p>CO1- CO1: To remember the various concepts in theory of geotechnical engineering. (BL1-Remember)</p> <p>CO2- CO2: To understand & analyze the different geotechnical engineering problems. (BL2-Understand)</p> <p>CO3- CO3: To implement the shear strength parameters, consistency limits used in geotechnical engineering. (BL3-Apply)</p> <p>CO4- CO4: To provide experimental basis, and to enable the students to suggest the type of shear tests to be conducted depending on soil conditions and the type of earth pressure depending on the wall conditions. (BL2-Understand)</p> <p>CO5- CO5: To evaluate the stress distribution in soils and stability of slopes. (BL5-Evaluate)</p> <p>CO6- CO6: To apply the understanding of index properties of soil, stress distribution and flow net in soil in solving problems of type of stresses in soil and compressibility and consolidation theories in soil. (BL2-Understand)</p> | | | | | | | |
| Courses Elements | Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗ | | SDG (Goals) | SDG11(Sustainable cities and economies) | | | | |

Part B

| Modules | Contents | Pedagogy | Hours |
|---------|--|--|-------|
| 1 | Basic Definitions & Index Properties: Definition and scope of soil mechanics, Historical development. Formation of soils. Soil composition. Minerals, Influence of clay minerals on engineering behaviour. Soil structure. Three phase system. Index properties and their determination. Consistency limits. Classification systems based on particle size and consistency limits. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 2 | Soil Water and Consolidation: Soil water, Permeability Determination of permeability in laboratory and in field. Seepage and seepage pressure. Flow nets, uses of a flownet, calculation of stresses. Compressibility and consolidation, Relationship between pressure and void ratio, Theory of one dimensional consolidation. Consolidation test, Fitting Time curves. Normally and over consolidated clays. Determination of preconsolidation pressure, settlement analysis. Calculation of total settlement. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 3 | Stress Distribution in Soils and Shear Strength of Soils: Stress distribution beneath loaded areas by Boussinesq and water gaurd's analysis. Newmark's influence chart. Contact pressure distribution. Mohr - Coulomb's theory of shear failure of soils, Mohr's stress circle, Measurement of shear strength, Shear box test, Triaxial compression test, unconfined compression test, Value shear test, Measurement of pore pressure, pore pressure parameters, critical void ratio, Liquefaction. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 4 | Slopes and stabilization of soil. Types of slope failures, Rotational slips. Stability number. Effect of ground water. Selection of shear strength parameters in slope stability analysis. Analytical and graphical methods of stability analysis. Stability of Earth dams. STABILIZATION OF SOIL: Introduction, Mechanical stabilization, Cement stabilization, Lime stabilization, Bituminous stabilization, Chemical stabilization, Thermal stabilization, Electrical stabilization, Stabilization by grouting, Use of geo-synthetic materials, Types, Functions and applications of geo-synthetics, Reinforced earth structures-components and construction. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 5 | Lateral Earth Pressure: Active, passive and earth pressure at rest. Rankine, Coulomb, Terzaghi and Culmann's theories. Analytical | Lectures with problem based learning, experimental learning, case study, field trips | 10 |



and graphical methods of determination of earth pressures on cohesionless and cohesive soils. Effect of surcharge, water table and wall friction. Arching in soils. Reinforced earth retaining walls.

Part C

| Modules | Title | Indicative-ABCA/PBL/ Experiments/Field work/ Internships | Bloom's Level | Hours |
|---------|----------------------|--|----------------|-------|
| 1 | casagrande apparatus | Experiments | BL2-Understand | 3 |
| 2 | permeability test | Experiments | BL3-Apply | 3 |
| 3 | sieve analysis | Experiments | BL2-Understand | 3 |
| 4 | water content | Experiments | BL2-Understand | 3 |

Part D(Marks Distribution)

| Theory | | | | | |
|-------------|-----------------------|---------------------|--------------------------|---------------------|--------------------------|
| Total Marks | Minimum Passing Marks | External Evaluation | Min. External Evaluation | Internal Evaluation | Min. Internal Evaluation |
| 100 | 40 | 40 | 12 | 60 | |
| Practical | | | | | |
| Total Marks | Minimum Passing Marks | External Evaluation | Min. External Evaluation | Internal Evaluation | Min. Internal Evaluation |
| 100 | 40 | 40 | 12 | 60 | |

Part E

| | |
|-------------------------|---|
| Books | Gopal Ranjan and Rao |
| Articles | https://books.google.com.na/books?id=U2AvQrA6I4sC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false |
| References Books | Dr. B.C.Punmia |
| MOOC Courses | https://onlinecourses.nptel.ac.in/noc22_ce74/preview |
| Videos | https://www.youtube.com/watch?v=V1m3cB-Aqy8 |

Course Articulation Matrix

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO1 | 1 | 2 | 2 | 2 | 2 | 2 | - | 3 | 3 | 1 | 2 | 2 | 3 | 3 | 2 |
| CO2 | 1 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 3 | 1 | 3 | 2 | 3 | 3 |
| CO3 | 1 | 1 | 1 | 2 | 1 | - | - | - | - | - | - | - | - | - | - |
| CO4 | 1 | 2 | 2 | 3 | 2 | 3 | - | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 |
| CO5 | 1 | 1 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - |
| CO6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



Syllabus-2023-2024

(SOET)(BTech-CivilEngineering)

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|--|--|-----------------|--------------------|---|---|---|---|---|
| Title of the Course | Basic Methods of Structural Analysis | | | | | | | |
| Course Code | CEL0409[T] | | | | | | | |
| Part A | | | | | | | | |
| Year | 2nd | Semester | 4th | Credits | L | T | P | C |
| | | | | | 3 | 1 | 0 | 4 |
| Course Type | Theory only | | | | | | | |
| Course Category | Discipline Core | | | | | | | |
| Pre-Requisite/s | basic knowledge of structure | | | Co-Requisite/s | | | | |
| Course Outcomes & Bloom's Level | CO1- • CO1: To remember the concept of SFD and BMD. (BL1-Remember) CO2- • CO2: To understand & analyze the Rolling Loads. (BL2-Understand) CO3- • CO3: To implement and analyze the different theorems on Beams (BL4-Analyze) CO4- • CO4: To analyze the sway portal frames (BL4-Analyze) CO5- • CO5: To evaluate the Arches and their thrust conditions. (BL5-Evaluate) CO6- • CO6: To create appropriate loading conditions for different complex and indeterminate structures (BL2-Understand) | | | | | | | |
| Courses Elements | Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗ | | SDG (Goals) | SDG11(Sustainable cities and economies) | | | | |

Part B

| Modules | Contents | Pedagogy | Hours |
|----------------|--|--|--------------|
| 1 | Strain Energy in tension, compression, torsion and bending, Castigliano's theorems, virtual work principles, Force analysis of Compound and complex trusses, Tension co-efficient method – application to simple space trusses. Deflection of determinate pin jointed frames using Castigliano's theorem, principle of virtual work, Unit load method & Graphical method (Williot- Mohr diagram) | Lectures with problem based learning, experimental learning, case study, | 10 |
| 2 | Rolling loads and influence lines: Maximum S.F. and B.M curves for various types of rolling loads, focal length , EUDL, influence lines for shear force and bending moment for determinate beams. Influence lines for member forces in pin jointed trusses & arches. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 3 | Two & Three hinged arches, cables and suspension bridges, Unstiffened & stiffened, Eddy's theorem, fixed arches. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 4 | Analysis of Indeterminate Structures: Statistical and kinematic indeterminacy, stability of structures. Analysis of fixed and continuous beams by three-moment theorem, Method of consistent deformation and energy methods. slopes and deflections of statically Indeterminate beams | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 5 | Analysis of non sway frames by moment distribution and slope deflection methods and energy method, Effect of sinking of support | Lectures with problem based learning, experimental learning, case study, field trips | 10 |

Part C

| Modules | Title | Indicative-ABCA/PBL/ Experiments/Field work/ Internships | Bloom's Level | Hours |
|----------------|--------------|---|----------------------|--------------|
| 2 | | PBL | | |

Syllabus-2023-2024

(SOET)(BTech-CivilEngineering)

| | | | | | | | | |
|--|---|-----------------|--------------------|---|---|---|---|---|
| Title of the Course | Elementary Design of Structures (Steel) | | | | | | | |
| Course Code | CEL0432[T] | | | | | | | |
| Part A | | | | | | | | |
| Year | 2nd | Semester | 4th | Credits | L | T | P | |
| | | | | | 3 | 1 | 2 | 6 |
| Course Type | Embedded theory and lab | | | | | | | |
| Course Category | Discipline Core | | | | | | | |
| Pre-Requisite/s | Basics of Autocad, Limit State Design and Working Stress Method | | | Co-Requisite/s | | | | |
| Course Outcomes & Bloom's Level | <p>CO1- To remember basic types of loading and steel structures(BL1-Remember)</p> <p>CO2- To understand different types of connections in steel members(BL2-Understand)</p> <p>CO3- To implement the knowledge of IS Code for Structural Design of Steel members(BL3-Apply)</p> <p>CO4- To Design different members like flexural and compression(BL2-Understand)</p> <p>CO5- To evaluate the different loading conditions according to different connections(BL2-Understand)</p> <p>CO6- To Create a Structural member fir for Different Loading Conditions(BL4-Analyze)</p> | | | | | | | |
| Coures Elements | Skill Development ✓ Entrepreneurship ✓ Employability ✓ Profressonal Ethics ✗ Gender ✗ Human Values ✗ Environment ✗ | | SDG (Goals) | SDG11(Sustainable cities and economies) | | | | |

Part B

| Modules | Contents | Pedagogy | Hours |
|---------|---|--|-------|
| 1 | Various loads and mechanism of the load transfer, partial load factors, structural properties of steel, design of structural connections- bolted, riveted and welded connections. | Lectures with problem based learning, experimental learning, case study, field trips | 8 |
| 2 | Design of Bolted and Riveted Connections | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 3 | Design of Welded Connections. | Lectures with problem based learning, experimental learning, case study, field trips | 8 |
| 4 | Design of Tension members and bracing systems. | Lectures with problem based learning, experimental learning, case study, field trips | 10 |
| 5 | Design of Compression members. | Lectures with problem based learning, experimental learning, case study, field trips | 8 |

Part C

| Modules | Title | Indicative-ABCA/PBL/ Experiments/Field work/ Internships | Bloom's Level | Hours |
|---------|--|--|---------------|-------|
| 1 | Analysis of different compressive strength of column for different sizes | PBL | BL4-Analyze | 3 |
| 2 | Tensile structure using steel chain connections | PBL | BL6-Create | 3 |

Part D(Marks Distribution)

| Theory | | | | | |
|-------------|-----------------------|---------------------|--------------------------|---------------------|--------------------------|
| Total Marks | Minimum Passing Marks | External Evaluation | Min. External Evaluation | Internal Evaluation | Min. Internal Evaluation |
| 100 | 40 | 40 | 12 | 60 | |
| Practical | | | | | |
| Total Marks | Minimum Passing Marks | External Evaluation | Min. External Evaluation | Internal Evaluation | Min. Internal Evaluation |
| 100 | 40 | 40 | 12 | 60 | |

Part E

| | |
|-------------------------|---|
| Books | S.K. Duggal, Steel Structure, T.M.H Publication |
| Articles | https://pdfcoffee.com/design-of-steel-structure-3rd-edition-by-s-k-duggal-4-pdf-free.html |
| References Books | S.S. Bhavikatti, Design of Steel Structure, Vikas Publication |
| MOOC Courses | https://www.my-mooc.com/en/mooc/introduction-steel-tenarisuniversity-steel101x-1/ |
| Videos | https://www.youtube.com/watch?v=_sG6L8Abfss |

Course Articulation Matrix

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | F |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|---|
| CO1 | 3 | 3 | - | - | 2 | 2 | - | - | 3 | 3 | - | - | 3 | - | 2 |
| CO2 | 3 | 3 | 1 | 2 | - | 2 | - | - | 2 | 3 | - | - | 2 | 2 | 1 |
| CO3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 1 | - | - | 1 | - | 1 |
| CO4 | 1 | 1 | 2 | 3 | 1 | - | - | - | - | - | - | - | 2 | - | 2 |
| CO5 | 1 | 1 | 1 | 2 | 1 | - | - | - | - | - | - | - | 2 | - | 2 |
| CO6 | - | - | - | - | - | - | - | - | 2 | 2 | - | - | 1 | 2 | 1 |

Syllabus-2023-2024

(SOET)(BTech-CivilEngineering)

| | | | | | | | |
|--|--|-----------------|--------------------|-----------------------|---|---|---|
| Title of the Course | OOPM | | | | | | |
| Course Code | CSP0401[P] | | | | | | |
| Part A | | | | | | | |
| Year | 2nd | Semester | 4th | Credits | L | T | P |
| | | | | | 0 | 0 | 2 |
| Course Type | Lab only | | | | | | |
| Course Category | Discipline Core | | | | | | |
| Pre-Requisite/s | | | | Co-Requisite/s | | | |
| Course Outcomes & Bloom's Level | <p>CO1- To remember the basic programming concept(BL1-Remember)</p> <p>CO2- Understand the basics of Python like python origin downloading and installing and basic concept of python(BL2-Understand)</p> <p>CO3- Apply the various conditional and looping statement and functional programming. (BL3-Apply)</p> <p>CO4- Explain various objects numbers and sequence in python Analyze the concept of regular expression.(BL4-Analyze)</p> <p>CO5- Evaluate the concept of object-oriented programming for better utilization of language.(BL5-Evaluate)</p> | | | | | | |
| Courses Elements | Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗ | | SDG (Goals) | | | | |

Part B

| Modules | Contents | Pedagogy | Hours |
|---------|--|---|-------|
| Unit 1 | Introduction to Python programming Introduction, origin of Python, Downloading, Installing and Running Python, Python Basics: Comment, Identifier, Indentations, Basic data types, conversions, operators, Build in functions. I/O Statements, Condition Statements & Loops: If, else, elif), conditional expressions, while, for, break continue | Lectures with whiteboard/PPT, Recorded video/interactive videos, programming labs | 8 |
| Unit 2 | Data Structures in Python Lists: Introduction, Accessing list, Operations, Working with lists, Tuple: Introduction, Accessing tuples, Operations, Working with list, Dictionaries: Introduction, Accessing values in dictionaries, Working with dictionaries, Set: Introduction ,Accessing set, Operations, Working with sets | Lectures with whiteboard/PPT, Recorded video/interactive videos, programming labs | 8 |
| Unit 3 | Functions, Modules, File Handling Functions: Defining a function, Calling a function, Types of functions, Function Arguments, Anonymous function, Global and local variables, Recursion. Modules: Creating modules, Importing module, Packages, File Handling :Opening and closing files, Reading and writing files | Lectures with whiteboard/PPT, Recorded video/interactive videos, programming labs | 8 |
| Unit 4 | Exceptional Handling, Regular Expressions Exception Handling: Exception, Exception Handling, Try and Except clause, User Defined Exceptions, Exception handling in files). Regular Expressions: Introduction/motivation, special symbols and characters for REs , Match function, Search function., Matching VS Searching., Modifiers, Patterns. | Lectures with whiteboard/PPT, Recorded video/interactive videos, programming labs | 9 |
| Unit -5 | Object Oriented Programming in Python Introduction, OOPS Basics: Class and object, Constructors, Need of Encapsulations, Attributes, default attributes, static attributes, static methods, initializing objects, Pass by reference , self. Relationships: Introduction, Aggregation, Dependency. Inheritance: Need of Inheritance, Overriding, Super, Types of Inheritance. Abstract Class, methods. | Lectures with whiteboard/PPT, Recorded video/interactive videos, programming labs | 9 |



