**SEMESTER-III**

# MATS School of Engineering & I.T
# MATS University, Raipur
# Scheme of Teaching & Examination
# IIIrd Semester
# B.Tech in Civil Engineering

| S. No. | Course code | SUBJECT | Periods per week | | | Evaluation Scheme | | Total Credit |
|--------|-------------|---------|---|---|---|---|---|---|
| | | | L | T | P | IM | ESE | |
| **THEORY** | | | | | | | | |
| 1 | BT340 | Mathematics-III | 3 | 0 | 0 | 30 | 70 | 3 |
| 2 | BT341 | Fluid Mechanics | 4 | 0 | 0 | 30 | 70 | 4 |
| 3 | BT342 | Computer Programming | 3 | 0 | 0 | 30 | 70 | 3 |
| 4 | BT343 | Structural Analysis-I | 4 | 0 | 0 | 30 | 70 | 4 |
| 5 | BT344 | Surveying-I | 4 | 0 | 0 | 30 | 70 | 4 |
| 6 | BT345 | Civil Engineering Materials | 3 | 0 | 0 | 30 | 70 | 3 |
| **PRACTICAL** | | | | | | | | |
| 7 | BT346 | Fluid Mechanics Lab | - | - | 2 | 20 | 30 | 1 |
| 8 | BT347 | Material Testing & Analysis Lab | - | - | 2 | 20 | 30 | 1 |
| 9 | BT348 | Surveying-I Lab | - | - | 2 | 20 | 30 | 1 |
| 10 | BT349 | Computer Programming Lab | - | - | 2 | 20 | 30 | 1 |
| | | **TOTAL** | **21** | **0** | **8** | **540** | **260** | **25** |

**L-Lecturer, P-Practical, ESE- End Semester Examination, IM-Internal Marks, T-Tutorial**

# MATS UNIVERSITY
# GULLU, ARANG, RAIPUR

**Semester**: **B.Tech 3rd Sem**        **Branch**:- **Civil Engineering**
**Subject:-MATHEMATICS-III**           **Code  :-  BT340**
Total Theory Periods: - **40**          Total Tutorial Periods: **00**
Total marks in end semester Exam: **100**
Minimum Number of Class test to be conducted: **02**

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**Course Objectives:**
1. Make student to understand FourierSeries.
2. To understand the Laplace Transform.
3. To understand the Partial Differential Equation..
4. To provide an understanding about Complex variables
5. To understand statistics

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**UNIT-1                    Fourier Series**
Periodic functions, Euler's formula, Dirichlet conditions, Change of interval, Even and odd functions, Half range fourier series, Perseval's identity, Practical harmonic analysis.
**(No. Of Periods 8+2)**

**UNIT-2                 Partial Differential Equation**
Formation, Solution by direct integration method, Liner equation of first order, Homogeneous linear equation with constant coefficients, Non-homogeneous linear equations, Method of separation of variables.
**(No. Of Periods 8+2)**

**UNIT-3                   Complex Variables**
Limit and derivative, Analytic functions, Cauchy-Riemann equations, Harmonic functions, Flow problems, Complex integration, Cauchy's theorem, Cauchy integral formula, Taylor & Laurent series, Singularity, Residues, Cauchy's residue theorem, Evaluation of real definite integrals.
**(No. Of Periods 8+2)**

**UNIT-4           Numerical Solution Of Ordinary And Partial
                        Differential Equations**
Taylor's series method, Picard method, Euler's method , Euler's modified method ,Runge-Kutta methods, Predictor-Corrector methods, Milne method, Adams-Bashforth method.
**Numerical solution of PDE's ,**
Classifications of second order PDE , Elliptic equations, solution of laplace equations , solution of poissons equation , solution of elliptic equation by relaxation method , Parabolic equation , solution of one dimensional and 2-D heat equations , hyperbolic equation, Wave equation.

**UNIT-5 Numerical Solution of Algebric Transcendental and Simultaneous
                    equations Differential**
Numerical solution of algebraic and transcendental equations: Newton-Raphson method, Secant method, Birage – Vieta method, Bairstow method.
Numerical solution of simultaneous linear equation: Direct method-Gauss elimination, Gauss-jordan and Crout's, Triangularisation method.
Iterative methods – Jacobi's, Gauss-siedal and Successive over relaxation method.
**(No. Of Periods 8+2)**

**TEXT BOOKS:-**
     1.Higher Engg. Mathematics by dr.B.S.Grewal-Khanna publishers.
     2.Advanced engg.Mathematics by Erwin kreyszig-John wiley &  sons.

**REFRENCE BOOKS:-**
     1.Advanced Engg.Mathematics by R.K. jain and S.R.K.iyengar-narosa publishing House.
     2.Applied Mthematics by P.N.Wartikar & J.N.Wartikar.Vol-II Pune vidyarthi Griha Prakashan    Pune.
     3.Applied Mathematics for Engineers & Physicists by Louis A.Pipes-TMH.

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**Course Outcome:**
1. Students are expected to understand Fourier Series
2. Students are expected to understand LAPLACE TRANSFORM
3. Students are expected to understand PARTIAL DIFFERENTIAL EQUATION
4. Students are expected to understand COMPLEX VARIABLES and STATISTICS

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# MATS UNIVERSITY

# GULLU, ARANG, RAIPUR

**Semester: B.Tech 3rd Sem**  **Branch:-Civil Engineering**
**Subject:-Fluid Mechanics**  **Code:-BT341**
Total Theory Periods: - **40**  Total Tutorial Periods: **00**
Total marks in end semester Exam: **100**
Minimum Number of Class test to be conducted: **02**

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**Course Objectives:**

1. Be familiar with different fluids
2. Be familiar with different fluids flow condition.
3. Learning different flow & losses in pipes.
4. Be familiar with flow in open channel & different sections.

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**UNIT-1**  **Introduction Fluid Statics**
Fluid and its properties, Pressure density-height relationship, Pressure measurement by manometers, Center of pressure, Buoyancy, Meta-Centric height, Fluid mass subjected to uniform accelerations.
**Kinematics of fluid flow**
Flow & its Types, Stream lines, Streak lines and path lines, Velocity potential and stream function, Continuity equation.
**(No. Of Periods 8+2)**

**UNIT-2**  **Turbulent flow in pipe**
Turbulent flow in pipes, Energy and momentum correction factor, Resistance coefficient (Friction factor) and its variation, Explicit equation for friction factors, Concept of equivalent length, pipes in series and parallel, Analysis of pipe network (Hardy-Cross method).
**Boundary layer Analysis**
Boundary layer thickness, Boundary layer over a flat plate, Types of boundary layer, Application of momentum equation, Fluid flow past submerged bodies, Drag and lift, Drag on sphere, Cylinder and disc, Magnus effect. **(No. Of Periods 8+2)**

**UNIT-3**  **Dynamics of fluid flow**
Euler's equation of motion, Bernoulli's equation and its application, Momentum equation and its application  to stationary and moving plates/vanes, Combined application of energy and momentum equations.
**Flow in Pipes**
Reyond's experiment, experimental determination of critical velocity ,transition from laminar to turbulent flow. Different types of losses in pipe.
**(No. Of Periods 8+2)**

**UNIT-4**  **Compressibility effect in pipe flow**
Water hammer, Analysis of simple Surge tank excluding friction.
Buckingham's theorem, Kinematics and dynamic similarity.
**Flow in open Channel**
Comparison between open channel and pipe flow, definition of uniform and non-uniform flow, uniform flow formula, Chezy's and  Manning's formula,
Hydraulically efficient  channel  section of rectangular, trapezoidal and circular type. Specific energy, critical flow, analysis of flow over hump and transition, broad crested weir, equation of gradually varied flow, hydraulic jump and evaluation of its elements in rectangular channel.
**(No. Of Periods 8+2)**

**UNIT-5          Flow through mouthpieces and orifices**

Hydraulic coefficients of orifice, bell method orifice, mouthpieces, Borda's mouthpieces, running free and submerged.

### Notches and Weirs

Rectangular, triangular and trapezoidal notches and weir, cippoletti and crested weir, aeration of nappe, cavitations submerged weir.

### Hydraulic Machines

Turbines and Pumps & their types **(No. Of Periods 8+2)**

# Name of Text Books:-

A text book of fluid mechanics by R. K. Bansal ( Laxmi publication)

A text book of fluid mechanics and Hydraulic mechanics in SI Units by R. K.    Rajput ( S. Chand and compony)

# Reference Books:-

Fluid Mechanics by Frank M. White (TMH)

A text book of Fluid Mechanics and Hydraulic mechanics with introduction of          fluids by Domkundwar and Domkundwar ( Dhanpatrai and company)

Hydraulic and Fluid Mechanics by P. N. Modi and S. M. Seth (Rajhans publication  Pvt. Ltd.)

Introduction to Fluid Mechanics by Som Biswas (TMH)

Hydraulic Machines by Jagdish lal (Metropolitan book company Pvt. Ltd.)

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**Course Outcomes:**
1. Students are expected to understand different types of fluids.
2. Students are expected to compare fluids flow condition.
3. Students are expected to understand & evaluate flow in pipes & losses.
4. Students are expected to compare flow of fluids

# MATS UNIVERSITY
# GULLU, ARANG, RAIPUR

**Semester**: **B.Tech 3rd Sem.**          **Branch**: **Civil Engineering**

**Subject: Computer Programming**          **Code**:   **BT342**
Total Theory Periods: **40**                    Total Tutorial Periods**: 10**
Total marks in end semester Exam: **100**
Minimum Number of class test to be conducted**: 02**

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**Course Objectives:**
1. Be familiarwith coading language
2. Be familiar with Terminology of computer programming
3. Learning different functions of programming language
4. Be familiar with operation of programs regarding different problems

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## UNIT-1:
History of C, Importance of C, BASIC Structure of C Programs, Programming Style, Executing a C Program, C Tokens, Keywords & Identifiers in C, Constants & Variables in C

## UNIT-2:
Data Types, Operators : Arithmetic operator, Relational operators, Logical Operator, Assignment Operator, Incrempent & Decrement operator, Conditional operator, Bitwise Operator Expressions, Precedence of Arithmetic Operator, Input & Output operations

## UNIT-3:
Decision Making& looping: Simple If Statement, If-Else Statement, Nested If Else  Statement, Switch Statement, Go To Statement. Loop: While, Do while, For Loop
Arrays:   Introduction, One-Dimensional Array, Two Dimensional Array, Multi Dimensional Array,   Declaration & Initializing of array

## UNIT-4:
String: Declaration & Initializing of string variables, Putting String Together, Comparison Of String.
Pointers:  Introduction, Declaration & Initializing of pointer variable, Accessing variable through pointer, Pointer expression.

## UNIT-5:
Functions:  Introduction, Need for user define function, Definition of function, Function calls, Argument with return value, Argument without return value, Recursion, Structure & Union.


**Name of Text Books:**
   1. Programming in C By E. Balagurusamy (TMH)
   2. Programming in C "Amiya Kumar Rath,Alok Kumar Jagadev,Santosh Ku.Swain

**Reference Books :-**
   **1**. The C programming Language by Dennis M Ritchie and Kernighan ( PHI)
   2. Let us C by Yashwant Kanetkar (BPB Publication)

3. C for all by S. Thamarai Selvin & R. Murugesan ( Anuradha Agencies)

4. Programming in C by Ghosh ( PHI)

5. Computer Programming in C by V. Rajaraman ( PHI )

**Name of Text Books:**

Let Us C++ - Yeshwant Kanitkar
(BPB Publications)
Numerical Methods in Engineering and Science - Dr. B.S.
Grewal (Khanna Publishers)

**Name of Reference Books:**

Problem Solving with C++ - Savitch
(Addison Wesley Publications)
Programming in C and PC Applications - Raj
Gopalan (Vikas Publishers)
Computer Graphics (C-Version) - Hearnt &
Beaker (Pearson Publications)
Principles of Interactive Computer Graphics - Newman
& Sproull (Tata McGraw Hill)
Numerical Methods for Engineering - Chopra and
Kanale (Tata McGraw Hill)

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**Course Outcomes:**
1. Students are expected to understand the basics of programming language
2. Students are expected to learn coding for different problems
3. Students are expected to understand & evaluate any kind of programs
4. Students are expected to gain skills for computing in programming language

# MATS UNIVERSITY
# GULLU, ARANG, RAIPUR

**Semester**: **B.Tech 3<sup>rd</sup> Sem**          **Branch:-Civil Engineering**
**Subject:-Structural Analysis-I**          **Code:- BT343**
Total Theory Periods: - **40**          Total Tutorial Periods: **00**
Total marks in end semester Exam: **100**
Minimum Number of Class test to be conducted: **02**

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**Course Objectives:**
1. Make student to understand between Determinate and Indeterminate structures.
2. To understand the methods to analyse slopes and deflections of structures.
3. To understand the method of Strain Energy to analyse deflections of structures.
4. To provide an understanding about loads position variation on structures and corresponding analysis by rolling loads and ILDs.
5. To understand behaviour of suspension bridges, cables and Arches.

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**Unit 1                    Stress Strain Relations**
Stresses and Strains, Properties and Testing of Steel, Stress–Strain Curve, Relation between the elastic constants, Elongation of bars.
Statically indeterminate problems in tension and compression.
**Analysis of Stresses and Strains**
Principal stresses, Transformation equations, Stress invariants, Plane stresses, Differential equations of equilibrium, Deformable bodies, Transformation equations, Principal strains, Mohr's circle, Compatibility conditions, Displacement equation of equilibrium. **[No. of Pds: 8+2]**

**Unit 2                    Bending of Beams & Frames**
Theory of simple bending – limitations, Beams of uniform strength, Beams of two materials, Shear stresses in symmetrical elastic beams. Shear force and bending moment diagrams.
**Determinate Structures**
Determinate vs. Indeterminate structures. Pin Jointed determinate space trusses, Distinction between determinate and indeterminate space trusses and simple.
**Deflection and Slope**
Moment curvature relation, The elastic curve, Macaulay's method, Area moment method, Basics of Conjugate beam method. **[No. of Pds: 8+2]**

**Unit 3                    Columns and Combined stresses**
Stable and unstable equilibrium, Short columns, Euler's formula for long columns, Rankin's formula. Beams subjected to bending and shear, Eccentrically loaded short column, Middle third rule. **[No. of Pds: 8+2]**

**Unit 4                              Torsion**
Torsion of circular, solid and hollow circular shafts - power transmission, Closed coiled and open coiled helical springs.
**Strain Energy**
Strain energy due to axial load, bending, shear and torsion, Castigliano's theorem for deflection, Betti's theorem - Maxwell's law of reciprocal deflections,

Unit load and strain energy method for determination of deflections of statically determinate beams - pin-joined trusses and rigid frames. **[No. of Pds: 8+2]**

**UNIT 5                     Rolling Loads & Influence Lines**
Introduction to Rolling loads - concept of influence lines - influence lines for reaction, Shear force and Bending moment in simply supported beams - influence lines for forces in trusses – analysis for different types of rolling loads - single concentrated load - several concentrated loads - uniformly distributed load shorter and longer than the span, Absolute maximum bending moment. **[No. of Pds: 8+2]**

**Name of Text Books:**
Strength of Materials – R.K. Rajput (S. Chand & Co.)
Basic Structural Analysis (Vol. I & II) : Bhavikatti S.S. (Vikas Publishing)
Theory of Structures : B.C. Punmia (Laxmi Publication)
Strength of Materials – S. Ramamurtham (Dhanpat Rai Publications)

**Name of Reference Books:**
Mechanics of Structures (Vol. – I) – Junarkar (Charotar Publications)
Strength of Materials – Timoshenko, S. & Gere (CBS Publishers)
Introductions to Solid Mechanics –Shames & Pitarresi (Prentice Hall of India)
Engineering Mechanics of Solid – Popov (Pearson Publication)
Strength of Materials (Part-I) – Timoshenko (CBS Pubishers)
Theory & Analysis of Structures (Vol. – I & II) : Jain, O.P. and Jain B.K. (Nem Chand)
Structural Analysis : R.C. Hibber (Pearson Publication)
Structural Analysis : Ghali, A. & Neville, M. (Chapman & Hall Publication. 1974)
Elementary Structural Analysis : Willbur and Norris (Tata McGraw Hill)
Structural Analysis : Negi L.S. & Jangid R.S. (Tata McGraw Hill)
Theory of Structures : Ramamurtham S. & Narayan R. (Dhanpat Rai Publications)

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**Course Outcomes:**
1. Students are expected to understand various methods to analyse structures for slopes and deflections.
2. Students are expected to understand various types' determinate and indeterminate structures.
3. Students are expected to understand rolling effects of loads and Influence diagrams.
4. Students are expected to understand concept of bridges of suspension and arch types.

# MATS UNIVERSITY
# GULLU, ARANG, RAIPUR

**Semester**: **B. Tech 3rd Sem**        **Branch:- Civil Engineering**
**Subject:-Surveying-I**        **Code:-**   **BT344**
Total Theory Periods: - **40**        Total Tutorial Periods: **00**
Total marks in end semester Exam: **100**
Minimum Number of Class test to be conducted: **02**

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**Course Objectives:**
1. To provide basic knowledge about principles of surveying for location, design and construction of engineering projects
2. Students develop skills using surveying instruments including measuring tapes, automatic levels, theodolites, and electronic distance measurement equipment.
3. The ability to identify error sources and the procedures to minimize errors.
4. Use standard survey tools
5. Understand and apply measurement error, accuracy, precision and techniques to improve accuracy of surveys

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**UNIT – I**            **Surveying**
Chain Survey: Instruments used. Selection of survey-stations. Chain-lines, Off-sets, Oblique-offsets, Tie-lines, Check-lines. Ranging. Field-Book, Plotting, Survey of India Topo-sheets. Their scales and conventional symbols.
Compass Survey: The prismatic compass. Definition and types of meridian. Dip and Declination. Whole circle bearing, Fore bearing and Back bearing. Local attraction. Calculation of included angles for closed and open traverses.
**[No. of Pds: 8+2]**

**UNIT – II**            **Levelling**
Levelling: Various parts of a Dumpy level, Temporary adjustments, Interrelationship of Bubble Tube Axis, Line of Collimation and Vertical Axis, Leveling staff, technical terms used in Levelling. Fly leveling. Profile leveling. Level field book. Arthmetical checks and problems on leveling.
Contours: Definition, Contour value. Identification of ridge, valley and other geographical features on a contoured plan. **[No. of Pds: 8+2]**

**UNIT – III**       **Trilateration and Triangulation**
Principle of Trilateration, EDM instrument and their uses, Reduction of observation, Principle and classification of Triangulation System, Triangulation chains, Strength of Figures, Station marks and Signals, Satellite station, intersected and Resected points, field work- Reconnaissance, Intervisibillty of station, Angular measurement, Base line measurement and its extension, Adjustment of Field observation and computation of co-ordinates.

**UNIT – IV**            **Adjustment Computations**
Weighting of observation . Treatment of random errors, probability equation, Normal law of error, Most Probable Value 7 measures of precision, Propagation of errors and variances. Most probable value , Principle of Least square, Observations and correlative Normal Equations. Adjustment triangulation figures and level net .

**UNIT – V**            **Plane Table Survey**
Principles, advantage and disadvantage , plane table equipment , Use of telescopic alidade and Indian pattern tangent clinometers , Different methods of plane table surveying , resection –Two and Three point problems. Field work in plane Table Surveying and Contouring.

**Minor Instrument**

Hand level , Abney level , Clinometer , Ceylon ghat tracer , Pentagraph , Planimeter , Ideograph. **[No. of Pds: 8+2]**

**TEXT BOOKS:-**
1. Surveying Vol. I  by  B.C. Punmia & Ashok Jain
2. Suverying Vol. II by  B.C.Punmia  & Ashok Jain
3. Surveying Vol. I  by  S.K.Duggal
4. Surveying Vol II by  S.K.Duggal

**Course Outcomes:**
Students will be able to:
1. Determine elevations by applying different techniques.
2. Deal with the minor instruments and will be familiar with their functioning.
3. Do transverse computations, detect and rectify errors.
4. Set out various curves with the field problems.

# MATS UNIVERSITY
# GULLU, ARANG, RAIPUR

**Semester**: **B.Tech 3ʳᵈ Sem.**　　　　**Branch:-Civil Engineering**
**Subject:-Civil Engineering Materials**　　**Code :-　BT345**
Total Theory Periods: - **40**　　　　　　Total Tutorial Periods: **00**
Total marks in end semester Exam: **100**
Minimum Number of Class test to be conducted: **02**

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**Course Objectives:**
1. To provide an understanding of materials of construction.
2. To provide an understanding of Special concrete.
3. To provide an understanding about timber, plywood, paints and glass materials.

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## Unit 1.　　　　Building Material & Construction
Bricks **:** Classification , Dimension, Characteristics , moulding , Various Test on bricks. Fly ash bricks.
Mortar: Definition, properties and usages.
Stone: Geological, physical and chemical classification of stone, important stones, uses of stone.
Steel: Cast-iron, Wrought iron, Steel, mild steel and Tor-steel.
Other Metals: Aluminium, Various Alloys.
**[No. of Periods: 8+2]**

## Unit 2.　　　　Cement & Aggregates
Raw materials, manufacturing process, Setting times , Vicat apparatus, Grades of cement,  Pozzolana cement & its classification, usages, Fly ash.
Types of Cement, Hydration of cement, tests on properties of cement, ferro cement.
Aggregate: Classification of Aggregates and their properties, grading curve and fineness modules. **(No. of Periods: 8+2)**

## Unit 3.　　　　　Concrete
Properties of concrete in fresh and hardened state, water cement ratio, Modulus of elasticity, factors affecting strength of concrete and durability, mixing, transporting, placing, compacting and curing  concrete, variables in proportioning concrete mixes, admixtures in concrete, tests on concrete.
Special concrete – Polymer concrete, fibre reinforced concrete, light weight concrete, high strength concrete, heavy weight concrete , ready mixed concrete, shotcrete, smart concrete, Green Concrete. **(No. of Periods : 8 + 2 )**

## Unit 4.　　　　Timber and Plywood
Characteristics of good timber, seasoning and preservation, names of timber producing trees and their relative market value.
Types and uses of plywood, veneers and hardboards Low cost materials for construction.  System concepts, cost effective materials, industrial wastes, agricultural wastes. **(No. of Periods : 8 + 2 )**

## Unit 5.　　　　　Paints, Glass etc.
Commercially available varieties of ceramics, glass and their uses, types of tiles, method of manufacturing and tests for suitability. Uses of Plastics and PVC. Composition and use of paints, varnishes and distempers. Composite materials, types and uses. **(No. of Periods : 8 + 2 )**

**Name of Text Books:**
Building Materials – S.K. Duggal (New Age Publication)
Building Materials – S. C. Rangwala (Charotar Publication)


**Name of Reference Books:**
Concrete Technology – A.M. Neville & J.J. Brooks (Pearson Education)
Concrete Technology – M.S. Shetty (S. Chand & Co.)
Engineering Materials – Surendra Singh (Laxmi Publication)
Construction Engineering and Management – S. Seetharaman (UmeshPublication)
Building Materials – Gurucharan Singh (Standard Publishers, Delhi)

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**Course Outcome:**
1. Students are expected to understand materials of construction.
2. Students are expected to know about Special concrete.
3. Students are expected to read about timber, plywood, paints and glass materials

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# Department of Civil Engineering
## List of Experiment

**Subject:** **Fluid Mechanics**
**Semester: III**
**Code:** **BT 346**

1. To determine the meta-centric height of a ship model.

2. To calibrate an orifice-meter.

3. To determine the head loss in various pipe fittings.

4. To study the variation of friction factor for pipe flow.

5. To verify the bernoulli's theorem.

6. To verify impulse momentum principle.

7. To calibrate a Venturimeter and study the variation of coefficient of discharge.

8. Experimental determination of critical velocity of pipe.

9. To study the transition from laminar to turbulent flow and to determine the lower critical Reynolds's number.

10. To determine the hydraulic coefficients ($C_c$, $C_d$ and $C_v$) of an orifice.

11. To determine the roughness coefficient of an open channel.

12. To determine the coefficient of discharge of a weir.

13. To determine the coefficient of discharge of a venturiflume.

14. Study of hydraulic jump in an open channel.

15. To determine the coefficient of discharge of a spillway.

16. To determine the performance characteristics of Francis turbine.

17. To determine the performance characteristics of Variable Speed Centrifugal Pump.

18. To determine Impact of moment for impact of free jet.

# Department of Civil Engineering
## List of Experiment

**Subject:** **Material Testing & Analysis Lab**

**Semester:**   **III**
**Code:**      **BT 347**

1. Determination of compressive strength of cement cube.

2. Determination of tensile strength of cement cube.

3. Determination of fineness of cement by sieving method.

4. Determination of fineness of cement by Blain Apparatus.

5. To determine Uniaxial tensile test of mild steel.

6. To determine Izod Charpy Value of given mild steel.

7. To determine the Rockwell Hardness of given material.

8. To determine Compressive strength of wood: (a.) Along the fiber and (b.) Across the fiber.

9. To study the cupping test machine and determination of Ericheser value of mild steel sheet.

10. To determine the modulus of rigidity of material of given shaft.

# Department of Civil Engineering
## List of Experiment

**Subject:**    **Surveying-I Lab**
**Semester:**  **III**
**Code:**      **BT 348**

1.  Determination of location of a point with the help of Two point problem.
2.  Determination of location of a point with the help of Three point problem.
3.  To plot a transverse of area by chain survey.
4.  To plot a transverse of area by prismatic compass (open )
5.  To plot a transverse of area by prismatic compass (close )
6.  To workout relative elevation of various points on area by performing profile leveling.
7.  To determine the elevation of a point with respect to reference by fly leveling.
08. Study of minor instruments.

# Department of Civil Engineering
## List of Experiment

**Subject:**    **Computer Programming Lab**
**Semester:**   **III**
**Code:**       **BT 349**

(1)    Write a program to add 2 numbers.
(2)    Write a program to print digit in reverse order.
(3)    Write a program to find if a number is even or odd.
(4)    Write a program to find greatest number using if statement.
(5)    Write a program to find greatest number using nested if else.
(6)    Write a program to find if number is perfect number or not.
(7)    Write a program to find prime number.
(8)    Write a program for Lucas series.
(9)    Write a program for Fabonary series.
(10)   Write a program to print Armstrong number.

# SEMESTER-IV