COURSE STRUCTURE

AND

DETAILED SYLLABUS

CIVIL ENGINEERING

For

B.TECH. FOUR YEAR DEGREE PROGRAMME
(Applicable for the batches admitted from 2018-19)

VAAGDEVI COLLEGE OF ENGINEERING

(Autonomous)
Bollikunta, Warangal – 506 005
Telangana State, India

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
B. Tech - CIVIL ENGINEERING
COURSE STRUCTURE

(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

I SEMESTER

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18MA01	Linear Algebra and Calculus	3	1	0	4
2	B18EN01	English	2	0	0	2
3	B18CH01	Engineering Chemistry	3	1	0	4
4	B18ME01	Engineering Graphics	1	0	4	3
5	B18CS01	Programming for Problem Solving	4	0	0	4
6	B18EN02	English Language Communication Skills Lab	0	0	2	1
7	B18CS02	Programming for Problem Solving Lab	0	0	2	1
8	B18MC01	Induction Program				
		Total Credits	**13**	**2**	**8**	**19**

II SEMESTER

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18MA02	Differential Equation and Vector Calculus	3	1	0	4
2	B18PH03	Engineering Physics	4	0	0	4
3	B18CE01	Engineering Mechanics	3	1	0	4
4	B18CS50	OOP's and Data Structures	3	0	0	3
5	B18ME02	Engineering Workshop & IT Workshop	0	0	3	1.5
6	B18PH04	Engineering Physics Lab	0	0	3	1.5
7	B18CS51	OOP's and Data Structures Lab	0	0	2	1
8	B18MC03	NSS/ NCC	0	0	2	0
		Total Credits	**13**	**2**	**10**	**19**

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
B. Tech - CIVIL ENGINEERING
COURSE STRUCTURE

(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

III SEMESTER

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18MA04	Probability and Statistics	3	1	0	4
2	B18CE02	Strength of Materials - I	3	0	0	3
3	B18CE03	Fluid Mechanics	3	0	0	3
4	B18CE04	Surveying	3	0	0	3
5	B18EE02	Basic Electrical and Electronics Engineering	3	0	0	3
6	B18CE05	Strength of Materials Lab	0	0	2	1
7	B18CE06	Surveying Lab	0	0	3	1.5
8	B18EE03	Basic Electrical and Electronics Engineering Lab	0	0	3	1.5
9	B18MC02	Environmental Sciences	2	0	0	0
		Total Credits	**17**	**01**	**08**	**20**

IV SEMESTER

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18CE07	Building Materials and Construction Planning	3	0	0	3
2	B18CE08	Strength of Materials – II	3	0	0	3
3	B18CE09	Hydraulics & Hydraulic Machinery	3	0	0	3
4	B18CE10	Structural Analysis – I	3	0	0	3
5	B18CE11	Engineering Geology	3	0	0	3
6	B18ME52	Basic Mechanical Engineering	3	0	0	3
7	B18CE12	Fluid Mechanics & Hydraulic Machinery Lab	0	0	2	1
8	B18CE13	Engineering Geology Lab	0	0	2	1
9	B18CE14	Building Drawing Lab – CAD	0	1	2	2
10	B18MC07	Gender Sensitization	2	0	0	0
		Total Credits	**20**	**01**	**06**	**22**

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
B. Tech - CIVIL ENGINEERING
COURSE STRUCTURE

(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

V SEMESTER

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18CE15	Design of Steel Structures	3	0	0	3
2	B18CE16	Geotechnical Engineering	3	0	0	3
3	B18CE17	Concrete Technology	3	0	0	3
4	B18CE18	Engineering Hydrology	3	0	0	3
5	B18CE33 B18CE34 B18CE35	**Professional Elective-I** Structural Analysis-II Remote Sensing Environmental Impact Assessment	3	0	0	3
6	B18MB01	Managerial Economics and Financial Analysis	3	0	0	3
7	B18CE19	Concrete Technology Lab	0	0	2	1
8	B18CE20	Geo Technical Engineering Lab	0	0	2	1
9	B18MC04	Indian Constitution	2	0	0	0
		Total Credits	**20**	**00**	**04**	**20**

VI SEMESTER

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18CE21	Design of RC Structures	3	0	0	3
2	B18CE22	Irrigation Engineering	3	0	0	3
3	B18CE23	Highway Engineering	3	0	0	3
4	B18CE36 B18CE37 B18CE38	**Professional Elective-II** Foundation Engineering Advanced Surveying Ground Improvement Techniques	3	0	0	3
5	B18CE39 B18CE40 B18CE41	**Professional Elective-III** Rehabilitation & Retrofitting of Structures Geographical Information System Construction Management	3	0	0	3
6	B18EN04 B18CS04 B18ME36	**Open Elective-I** Human Values and Professional Ethics Database Management System Power Plant Engineering	3	0	0	3
7	B18EN03	Advanced English Communications Skills Lab	0	0	3	1.5
8	B18CE24	Highway Engineering Lab	0	0	2	1
9	B18CE25	Structural Design and Detailing Lab	0	0	3	1.5
10	B18MC05	Logical Reasoning and Quantitative Aptitude	2	0	0	0
		Total Credits	**20**	**0**	**8**	**22**

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
B. Tech - CIVIL ENGINEERING

COURSE STRUCTURE
(Applicable for the batches admitted from A.Y. 2018-2019 onwards)
VII SEMESTER

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18CE26	Estimation and Valuation Practice	3	1	0	4
2	B18CE27	Environmental Engineering	3	0	0	3
3	B18CE42 B18CE43 B18CE44	**Professional Elective-IV** Watershed Management Transportation Engineering Bridge Engineering	3	0	0	3
4	B18CE45 B18CE46 B18CE47	**Professional Elective-V** Pre stressed Concrete Earthquake Engineering Reinforced Earth and Geotextiles	3	0	0	3
5	B18MB03 B18MB05 B18EC24	**Open Elective II** Entrepreneur Development Industrial Management Digital Image Processing	3	0	0	3
6	B18CE28	Environmental Engineering Lab	0	0	2	1
7	B18CE29	Mini Project and Internship#	0	0	0	2
8	B18CE30	Major Project Phase I	0	0	8	4
		Total Credits	**15**	**1**	**10**	**23**

The student should undergo industrial training/internship for a minimum period of two months during the summer vacation of 3rd year. To be evaluated at the beginning of the VII semester by assessing the report and seminar presentations.

VIII SEMESTER

S.No	Course Code	Title of the Course	L	T	P	Credits
1	B18CE48 B18CE49 B18CE50	**Professional Elective-VI** Pavement Design Solid Waste Management Finite Element Method	3	0	0	3
2	B18MB06 B18ME25 B18ME42	**Open Elective-III** Intellectual Property Rights Nanotechnology Non-Conventional Energy Sources	3	0	0	3
3	B18CE31	Technical Seminar	0	0	2	1
4	B18CE32	Major Project Phase II	0	0	16	8
		Total Credits	**6**	**0**	**18**	**15**

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18MA01) LINEAR ALGEBRA AND CALCULUS

B. Tech– I Sem. (Common to all branches)

L	T	P	C
3	1	0	4

Prerequisites: NIL

SYLLABUS CONTENT:

UNIT-I: Matrices
Matrices: Types of Matrices, Symmetric; Hermitian; Skew-symmetric; Skew-Hermitian; orthogonal matrices; Unitary Matrices; Rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; solving system of Homogeneous and Non-Homogeneous equations, Gauss elimination method; Gauss Seidel Iteration Method.

UNIT-II: Eigen Values and Eigen vectors
Linear Transformation and Orthogonal Transformation: Eigen values and Eigen vectors and their properties: Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal transformation.

UNIT-III: Sequences & Series
Sequence: Definition of a Sequence, limit; Convergent, Divergent and Oscillatory sequences. Series: Convergent, Divergent and Oscillatory Series; Series of positive terms; Comparison test, p-test, D-Alembert's ratio test; Raabe's test; Cauchy's Integral test; Cauchy's root test; logarithmic test. Alternating series: Leibnitz test; Alternating Convergent series: Absolute and Conditionally Convergence.

UNIT-IV: Calculus
Mean value theorems: Rolle's theorem, Lagrange's Mean value theorem with their Geometrical Interpretation and applications, Cauchy's Mean value Theorem. Taylor's Series.
Applications of definite integrals to evaluate surface areas and volumes of revolutions of curves (Only in Cartesian coordinates), Definition of Improper Integral: Beta and Gamma functions and their applications.

UNIT-V: Multivariable calculus (Partial Differentiation and applications)
Definitions of Limit and continuity. Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence & independence, Maxima and Minima of functions of two variables and three variables using method of Lagrange multipliers.

COURSE OUTCOMES:

After learning the contents of this course, the student must be able to

CO1: Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations

CO2: Find the Eigen values and Eigen vectors and Reduce the quadratic form to canonical form using orthogonal transformations.

CO3: Analyze the nature of sequence and series.

CO4: Solve the applications on the mean value theorems and Evaluate the improper integrals using Beta and Gamma functions

CO5: Find the extreme values of functions of two variables with/ without constraints.

TEXT BOOKS

1.B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010

2.Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John wiley & Sons, 2006.

REFERENCES

1.G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.

2.N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.

3.Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18EN01) ENGLISH

B. Tech– I Sem. (Civil Engineering)

L	T	P	C
4	0	0	2

Prerequisites: NIL

INTRODUCTION

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students. In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study.

Students should be encouraged to read the texts leading to reading comprehension and different types of passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc.

The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.

Learning Objectives: The course will help to

a. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.
b. Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus.
c. Develop study skills and communication skills in formal and informal situations.

SYLLABUS CONTENT:

UNIT –I Inventions and Discoveries

a)Inventors

Vocabulary: Word Formation – Prefixes and Suffixes
Grammar: Contracted forms of verbs, Tense and Aspects.
Reading: Skimming through the Passage
Writing: Information transfer-Describing trends

b) Aliens

Vocabulary: One word substitutes
Grammar: Articles.

Reading: Comprehension and inference
Writing: Description of people, places and objectives

UNIT –II Information and Fashion

a) Social Media

Vocabulary Building: Synonyms and Antonyms
Grammar: Redundancies and Clichés.
Reading: Comprehension and inference, reading for facts and opinions.

Basic Writing Skills: Paragraph writing – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in Documents, E-mail, E-mail etiquette.

b) Fashion

Vocabulary: Words often confused
Grammar: Active and Passive Voice
Reading: Reading a procedure
Writing: Types of essays, argumentative essay.

UNIT –III Know the History

a) Indian Architecture

Vocabulary: Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.
Grammar: Conjunctions
Reading: Understanding a historical essay
Writing: Describing structures.

b) History

Vocabulary: Words Misspelt
Grammar: Prepositions.
Reading: Scanning, reading for Comprehension
Writing: Types of Paragraphs.

UNIT –IV Science and Fiction

a) Genetics

Vocabulary: Abbreviations and Acronyms
Grammar: Common Errors in Tenses
Reading: Categorizing Information
Writing: Report writing.

b) Superheroes

Vocabulary: Idiomatic Expressions.

Grammar: Question tags.
Reading: Reading for Comprehension
Writing: Gadget review.

UNIT –V War and Sports

a)War

Vocabulary: Homonyms, Homophones and Homographs
Grammar: Subject-verb agreement
Reading: Reading to summarize
Writing: Letter of enquiry.

b) Sports

Vocabulary: Technical Vocabulary
Grammar: Common Errors in English
Reading: Scanning a text
Writing: Letters of complaint.

COURSE OUTCOMES: By the end of the course, students will be able to

CO 1: Use English Language effectively in spoken and written forms.
CO 2: Comprehend the given texts and respond appropriately.
CO 3: Communicate confidently in various contexts and different cultures.
CO 4: Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
CO 5: Develops and Communicates by stating main ideas relevantly and coherently in speaking & writing.

Prescribed Textbook: *English for Technical Communication* by **Sudarshana, N.P. and C. Savitha,** Published by Cambridge University Press.

References:

1. Swan, M. (2016). Practical English Usage. Oxford University Press.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.
3. Wood, F.T. (2007).Remedial English Grammar. Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper Resource Book.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge University Press.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CH01) ENGINEERING CHEMISTRY

B. Tech– I Sem. (CIVIL, MECH, CSE)

L	T	P	C
3	1	0	4

Prerequisites:NIL

SYLLABUS CONTENT:

UNIT-I: Molecular structure (8 Lectures)

Metallic bonding, valence bond theory, crystal field theory and the energy level diagrams of transition metal ions (splitting of d-orbitals in octahedral and tetrahedral geometry) and their magnetic properties. Atomic and molecular orbitals. LCAO, molecular orbital theory of diatomic molecules. N_2& O_2.

UNIT-II: Organic reactions and Polymers (8 Lectures)

Organic Chemistry: Introduction to types of organic reactions involving substitution, addition, elimination, oxidation by $KMnO_4$, OsO_4, reduction by $LiAlH_4$, $NaBH_4$

Polymers: Introduction to polymers, classification of polymers, mechanism of free radical addition polymerization, properties of polymers-crystallinity, melting point, boiling point and glass transition temperature. Conducting polymers-classification, mechanism of conduction in conducting polymers-poly acetylene and ploy aniline, applications.

UNIT-III: Electrochemistry (12 Lectures)

Introduction to electrochemistry, conductance-specific, equivalent and molar conductance, units and their relation. Numerical Problems. Applications of conductance – conductometric titrations.

Electrochemical and Electrolytic cells, Galvanic cell, Electro chemical series-applications, measurement of e.m.f. and single electrode potential, Nernst's equation and its applications, Types of electrodes: Reference electrodes (SHE, SCE and QH), Ion-selective electrode-glass electrode, applications of electrode potentials-determination of pH and potentiometric titrations. Batteries: primary cells-lithium cells. Secondary cells – Pb-acid storage cell, lithium-ion cells. Fuels cells-hydrogen-oxygen fuel cell. Methanol-oxygen fuel cell-advantages nd applications.

UNIT-IV: Water Technology & Corrosion (10 Lectures)

Introduction, types of hardness, units and Numerical problems. Estimation of hardness of water-EDTA method. Boiler troubles-scales and sludges. Treatment of Boiler feed water-Ion-exchange process. De-salination of brackish water-Reverse Osmosis. Domestic water treatment-specifications and steps involved in the treatment of potable water.

Corrosion: Introduction, causes of corrosioin, types of corrosion-dry and wet corrosion-mechanism of electrochemical corrosion. Caustic embrittlement and boiler corrosion. Factors affecting corrosion and corrosion control methods-proper designing, cathodic protection(sacrificial anodic protection and impressive current

cathodic protection) and surface coatings (anodic and cathodic), Methods of application of metal coatings-Hot dipping(galvanization and tinning) and electroplating of copper.

UNIT-V: Phase rule and Surface chemistry (10 Lectures)

Phase rule: Definition of terms, phase rule equation, phase diagrams: one component system – water system, two component system- Ag-Pb system, Iron-carbon phase diagram-cooling curves, annealing and case hardening.

Surface Chemistry: Adsorption-types of adsorption, adsorption isotherms- Freundlich adsorption isotherm and Langmuir adsorption isotherm, applications of adsorption.

Course Outcomes: The basic concepts included in this course will help the student to gain:

CO1: Recall previous knowledge regarding atomic and molecular structure.
CO2: The knowledge of organic reaction mechanisms and polymers.
CO3: The required principles and concepts of electro chemistry and batteries.
CO4: The knowledge of water treatment and corrosion.
CO5: Apply phase rule and absorption to construct the materials by analyzing their compositions.

SUGGESTED READING:

(i) Text book of Engineering Chemistry by Jain & Jain.
(ii) Text book of Engineering Chemistry, CENGAGE learning by Prasanta Rath, B. Ramadevi, Ch. Venkata Ramana Reddy & Subhendu Chakroborty.
(iii) University chemistry, by B. H. Mahan
(iv) Engineering Chemistry by Shashi Chawla

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18ME01) ENGINEERING GRAPHICS

B. Tech– I Sem. (CIVIL, MECH, CSE)

L	T	P	C
1	0	4	3

Prerequisites:NIL

SYLLABUS CONTENT:

Unit – I Introduction to Engineering Drawing:
Principles of Engineering Graphics and their significance, ISO and ANSI standards for coordinate dimensioning- usage of Drawing instruments, lettering

a. Conic sections including the Rectangular Hyperbola (General method only);
b. Roulettes-Cycloid, Epicycloid, Hypocycloid
c. Involute
d. Scales – Plain, Diagonal and Vernier Scales.

Unit –II Principles of Orthographic Projections in First Angle Projection- Conventions
Projections of Points
Projection of lines: Parallel, Perpendicularinclined to one plane and inclined to both the planes.

Unit-III
Projection of planes: Plane parallel, perpendicular and inclined to one reference plane. Planes inclined to both the reference planes – Auxiliary Planes;
Projection of Regular Solids-Projection of regular solids, Cube, prisms, pyramids, tetrahedron, cylinder, Cylinder and cone, axis inclined to one plane and both planes – Auxiliary Views Projections of Regular Solids.

Unit-IV
Sections and sectional views of right angular solid-Prism, Cylinder, Pyramid, Cone – Auxiliary Views; **Development of surfaces** of Right Regular Solids – Prism, Pyramid, Cylinder and Cone.

Unit-V Isometric Projections:
Chapter-I Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and compound Solids; Conversion of Isometric views to Orthographic views and Vice-versa, Conventions.
Chapter-II Overview of Computer Graphics: listing the computer technologies that impact on graphical communication, Demonstrating knowledge of the theory of CAD software -The Menu System, Toolbars Standard, Object Properties, Draw, Modify and Dimension.

COURSE OUTCOMES:

The students will be able to

CO1 : Learn the principles of Engineering graphics and their significance.
CO2: Perform projection of lines inclined to one or two planes.
CO3: Perform the projections and views on the planes and solids.
CO4: Development of surfaces on solids and draw different sections.
CO5: Convert orthographic views into isometric views and explore various computer technologies.

TEXT BOOKS

1. Agrawal B & Agrawal C.M. (2012), Engineering Graphics, TMH Publications.
2. Bhatt N.D., Panchal V.M. & Ingke P.R., (2014), Engineering Drawing, Charotar Publishing House.

REFERENCES

1. Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers.
2. (Corresponding set of) CAD Software Theory and User Manuals.
3. Engineering Graphics. P I Varghese Tata McGraw Hill Education Pvt. Ltd.
4. Engineering Drawing – P.J.Shan S.Chand Publishers.
5. Engineering Drawing – Johle/Tata McGraw Hill Book Publishers.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS01) PROGRAMMING FOR PROBLEM SOLVING

B. Tech– I Sem. (CIVIL, MECH, CSE)

L	T	P	C
4	0	0	4

Prerequisites:NIL

SYLLABUS CONTENT:

UNIT -1

Introductionto Computers: Block Diagram of Computer,Memory Hardware ,Software, Operating Systems, Steps in Problem Solving, Algorithms , Flowcharts, Pseudo code, Types of Programming Languages, Introduction to C, History of C, Structure of a C Program. *(Chapter 1: 1.1 - 1.10 , 1.17 – 1.20)*

Introduction to C Programming: The C Character Set, Identifiers and - Keywords, Data Types, Constants and Variables, Declarations, Expressions & Statements, Input / Output Statements (Formatted and Unformatted), Creating and Running a C program.
(Chapter 2: 2.1 – 2.27 & Chapter 4: 4.1 – 4.17)

Operators and Expressions : Unary Operators ,Arithmetic Operators, Relational and Logical Operators, Assignment Operators, Conditional operator, Bitwise Operators, special operators, Precedence & Associativity, Type Casting and Type Conversion. *(Chapter 3 : 3.1 – 3.17)*

UNIT – 2

Control Statements: Branching Statements – if, if-else, else- if, nested-if. Switch statement. Un-conditional Branching Statement- goto. Looping Statements- while, do-while, for, nested loops. Break & Continue. *(Chapter 6 : 6.1 – 6.47)*

Functions : Introduction, Defining a Function, Types of Functions, Accessing a Function, Function Prototypes, Passing Arguments to a Function – call by value, Recursion. *(Chapter 7: 71. - 7.26)*

Storage Classes: Automatic Variables, External (Global) Variables, Static Variables, Register. *(Chapter 8: 8.1 – 8.13)*

UNIT – 3

Arrays: Definition - Single Dimensional Arrays, Multi Dimensional Arrays, Declaration, Initialization, Reading & Writing elements in to an Array, Passing Arrays to Functions. Linear Search , Binary search, Bubble sort
(Chapter 9: 9.1 – 9.29 & Reference book 2:)

Strings: Declaration and Initialization of Strings, Reading and Writing a String, String Manipulation Functions , String as Array of Characters, Array of strings, Sorting of Strings. *(Chapter 10: 10.1 – 10.15)*

Structures and Unions: User-Defined Data Types , Defining a Structure, Processing a Structure, Array of Structures, Nested Structures, Passing Structures To Functions. Unions. Typedef. Enumerated types - enum. *(Chapter 12:12.1, 12.2, 12.3, 12.5,12.7)*

UNIT – 4

Pointers: Introduction, Pointer Declarations, Pointer to Pointer, Operations on Pointers -Pointer Arithmetic, Dynamic Memory Allocation – Malloc(), Calloc(), Realloc(), Free(). Pointers and Functions - call by Reference, Pointers and Arrays (one dimensional, two dimensional), Array of Pointers. Structures and Pointers, Self-Referential Structures. *(Chapter 11: 11.1 – 11.31 & Chapter 12: 12.4 ,12.6)*

UNIT- 5

File Handling: Introduction, Text Files and Binary Files, File Handling Functions-Opening and Closing a File, File Opening Modes, Reading and Writing a File. Random Access File Functions – fseek() , rewind(), ftell(). *(Chapter 13: 13.1 – 13.31)*
Command Line Arguments, C Preprocessor Directives (*Chapter 15: 15.7,15.20)*

COURSE OUTCOMES:

CO1: Understanding how problems are posed and how they can be analyzed for obtaining solutions.
CO2: Understanding the fundamentals of C programming.
CO3: Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.
CO4: Implementing different operations on arrays and creating and using of functions to solve problems.
CO5: Ability to design and implement different types of file structures using standard methodology.

TEXT BOOK:

Byron Gottfried, ***"Programming with C"*** , Third Edition(Schaum's Outlines) McGraw Hill.

REFERENCE BOOKS:

1. B.A. Forouzan and R.F. Gilberg , *"C Programming and Data Structures"* , Cengage Learning (3rd Edition)
2. Pradip Dey & Manas Ghosh, *"Programming in C"*, 2nd Edition , Oxford University Press,2013.
3. E. Balaguruswamy , *"Programming in ANSI C "* ,McGraw-Hill Education, 2008.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18EN02) ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

B. Tech– I Sem. (Civil Engineering)

L	T	P	C
0	0	2	1

Prerequisites: NIL

The **Language Lab** focuses on the production and practice of sounds of language to familiarize the students with the use of English in everyday situations both in formal and informal contexts.

Course Objectives:

- To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning
- To sensitize students to the nuances of English speech sounds, stress and intonation.
- To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
- To improve the fluency of students in spoken English and neutralize the influence of the sounds of their mother tongue
- To train students to use language appropriately for public speaking and interviews.

SYLLABUS CONTENT:

English Language and Communication Skills Lab (ELCS) shall have two parts:

a. Computer Assisted Language Learning (CALL) Lab
b. Interactive Communication Skills (ICS) Lab

Listening Skills

Objectives

1. To enable the students develop their listening skills so that they may appreciate its role in developing LSRW skills language and improve their pronunciation
2. To impart the students with necessary training in listening so that they can understand the speech of people of different backgrounds and regions

Students should be given practice in listening to the sounds of the language, to be able to recognize them and find the distinction between different sounds, to be able to mark stress and recognize and use the right intonation in sentences.

• Listening for general content • Listening to fill in information • Intensive listening • Listening for specific information

Speaking Skills

Objectives

1. To involve the students in speaking activities in various contexts
2. To enable the students express themselves fluently and appropriately in social and professional contexts

• Oral practice: Just A Minute (JAM) Sessions • Describing objects/situations/people • Role play – Individual/Group activities

➢ The following course content is prescribed for the English Language and Communication Skills Lab based on Unit-6 of AICTE Model Curriculum 2018 for B. Tech First English.

Exercise – I

CALL Lab: *Understand:* Listening Skill- Its importance – Purpose- Process- Types- Barriers. *Practice*: Introduction to Phonetics – Speech Sounds – Vowels and Consonantal Phonemes.

ICS Lab: *Understand:* Communication at Work Place- Spoken vs. Written language. *Practice:* Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave – Introducing Oneself and Others.

Exercise – II

CALL Lab: *Understand:* Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context. *Practice:* Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.

ICS Lab: *Understand:* Features of Good Conversation – Non-verbal Communication. *Practice:* Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette.

Exercise - III

CALL Lab: *Understand:* Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI).
Practice: Common Indian Variants in Pronunciation – Differences in British and American Pronunciation.

ICS Lab: *Understand:* How to make Formal Presentations. *Practice:* Formal Presentations.

Exercise – IV

CALL Lab: *Understand:* Listening for General Details. *Practice:* Listening Comprehension Tests.

ICS Lab: *Understand:* Public Speaking – Exposure to Structured Talks. *Practice:* Making a Short Speech – Extempore.

Exercise – V

CALL Lab: *Understand:* Listening for Specific Details. *Practice:* Listening Comprehension Tests.

ICS Lab: *Understand:Debate/Group Discussion/* Interview Skills. *Practice:Mock Group Discussion/* Mock Interviews.

LEARNING OUTCOMES:

Students will be able to attain -

CO 1: Better understanding of nuances of English language through audio- visual experience and group activities

CO 2: Speaking with clarity and confidence which in turn enhances their employability skills

Minimum Requirement of infrastructural facilities for ELCS Lab:

1. Computer Assisted Language Learning (CALL) Lab:

The Computer Assisted Language Learning Lab has to accommodate 40 students with 40 systems, with one Master Console, LAN facility and English language learning software for self- study by students. System Requirement (Hardware component): *Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications:*
i) Computers with Suitable Configuration
ii) High Fidelity Headphones

2. Interactive Communication Skills (ICS) Lab:
The Interactive Communication Skills Lab: A Spacious room with movable chairs and audio-visual aids with a Public-Address System, a LCD and a projector etc.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(B18CS02) PROGRAMMING FOR PROBLEM SOLVING – LAB

B. Tech– I Sem. (Civil Engineering)

L	T	P	C
0	0	2	1

Prerequisites: NIL

SYLLABUS CONTENT:

WEEK-1

1. Write a C program to find the areas of shapes like circle, square, rectangle and triangle
2. Write a C program to demonstrate Type Casting and Type Conversion.

WEEK-2

1. Write a C program to find the roots of a quadratic equation.
2. Write a C program to find greatest of any 3 numbers.
3. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)

WEEK-3

1. Fibonacci sequence is defined as follows: the first and second terms in sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
2. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
3. Write a C program to find the second largest number in a set of n numbers.

WEEK-4

1. Write a C program to generate Pascal's triangle.
2. Write a C program to find the LCM(Least Common Multiple) and GCD (greatest common divisor) of two given integers.
3. Write a C program to construct a pyramid of numbers.

WEEK-5

1. Write a C program to find sum of series 1+x^1+x^2+x^3+.....+x^n using functions.
2. Write a C program to find factorial of a given number using Recursion.
3. Write a C program to demonstrate the use of Storage Classes

WEEK-6

1. Write a C program to find both the largest and smallest number in a list of integers.
2. Write a C program to reverse the elements of an array (i.e., the first value should become last value etc.)
3. Write a C program to insert an element at a given position in an Array using functions.

WEEK-7

1. Write a C program to perform all of the following:
   a. Matrix Addition and subtraction
   b. Matrix Multiplication
   c. Find Transpose and test if a matrix is symmetric or not

d.Test if a matrix is identity matrix or not

WEEK-8

1.Write a C program to perform linear search
2.Write a C program to perform binary search
3.Write a C program to sort the elements using bubble sort

WEEK-9

1.Write a C program to insert a sub-string in to a given main string at a given position.
2.Write a C program to count number of characters, words and sentences in a given text.
3.Write a C program to determine if the given string is a palindrome or not.
4.Write a C program to sort the given names in alphabetical order.

WEEK-10

1.Write a C program to implement array of structures.(use student structure).
2.Write a menu driven C program that uses functions to perform the following operations on complex numbers stored in a structure:
   i.Reading a complex number
   ii.Writing a complex number
   iii.Addition of two complex numbers
   iv.Multiplication of two complex numbers
3.Write a C program to demonstrate Unions and enum.

WEEK-11

1.Write a C program for Pointer Arithmetic.
2.Write a C program to swap two numbers using Call by value and Call by reference.
3.Write a C program to demonstrate calling of a function (like add, subtract, multiply) using a function pointer.

WEEK-12

1.Write a C program using pointer to create a two dimensional matrix, to input values in to the matrix and to display the matrix and its transpose. Free the memory properly.
2.Write a C program to demonstrate on structures and pointers.
3.Write a C program for dynamic creation of structures using pointers

WEEK-13

1.Write a C program to count no of alphabets, no of digits, no of special symbols, no of white spaces and no of tabs in a given text file.
2.Write a C program which copies one text file to another text file and verify the correctness.
3.Write a C program which copies one binary file to another binary file and verify the correctness.

WEEk-14

1.Write a C program to produce reverse of the content of a text fie into another text file and verify the result.
2.Write a C program to merge two text files into a third text file (i.e., the contents of the first file followed by those of the second are put in the third file) and verify the correctness.

WEEk-15

1.Write a command-line C program to reverse the first n characters in a file. (Note: The file name and n are specified on the command line.)
2.Write a C Program that removes all comment lines from a C source file.

COURSE OUTCOMES:

CO1: Design the fundamentals of C programming.
CO2: Write C programs using operators
CO3: Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.
CO4: Implementing different operations on arrays and creating and using of functions to solve problems.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18MC01) INDUCTION PROGRAMME

B. Tech– II Sem. (Common to all branches)

L	T	P	C
3	1	0	4

Prerequisites:NIL

When new students enter an institution, they come with diverse backgrounds, thoughts and preparations. It is very important to help them adjust to the new environment. The following are the activities of induction program in which the students would be fully engaged throughout the day for entire duration of the program.

1. **Physical Activity:** This would involve a daily routine of physical activity with games and sports. Each student should pick one game and learn it for three weeks. This would also involve gardening or other suitably designedactivity.
2. **Creative Arts:** Every student would select one skill related to arts whether visual arts or performing arts. The student would practice it every day for the duration of the induction program.
3. **Universal Human Values:** This will help the students to experience the joy of learning, stand uptopeerpressure,takedecisionswithcourage,beawareofrelationshipswithinmates,etc.
4. **Proficiency Modules:** During the induction program crash courses have to be conducted to improve Englishskills.
5. **Lectures by Eminent people:** This period can be utilized for lectures by eminent personalities. It would give the students exposure to people who are in public life and are sociallyactive.
6. **Literary:** Literary activity would encompass reading, writing and debating, enacting a play, etc.
7. **Familiarization to Dept./Branch & Innovations:** The students are explained about different methods of study. They are further explained about the different aspects of their branches, departments and the role they play in the society. The different laboratories, workshops & otherfacilitiesavailableinthedepartmentsareintroducedtothestudents.

Notwithstanding the above activities of the induction program, any other relevant activity may be planned to enthuse, encourage and benefit the students.

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18MA02) DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS

B. Tech– II Sem. (Common to all branches)

L	T	P	C
3	1	0	4

Prerequisites:NIL

SYLLABUS CONTENT:

UNIT-I: First Order ODE

Exact, linear and Bernoulli's equations; Applications: Newton's law of cooling, Law of natural growth and decay; Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

UNIT-II: Ordinary Differential Equations of Higher Order

Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type e^{ax}, sin ax, cos ax, polynomials in x, $e^{ax}V(x)$; method of variation of parameters; Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

UNIT-III: Multivariable Calculus (Integration)

Evaluation of Double Integrals (Cartesian and polar coordinates); change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals. Applications: Areas (by double integrals) and volumes (by double integrals and triple integrals), Centre of mass and Gravity (constant and variable densities) by double and triple integrals (applications involving cubes, sphere and rectangular parallel piped).

UNIT-IV: Vector Differentiation

Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V: Vector Integration

Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

COURSE OUTCOMES:

After learning the contents of this paper the student must be able to

CO1: Identify whether the given differential equation of first order is exact or not

CO2: Solve higher differential equation and apply the concept of differential equation to real world problems

CO3: Evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and gravity for cubes, sphere and rectangular parallel piped.

CO4: Evaluate the Gradient, Divergence and Curl of vector field to predict areas and volumes.

CO5: Evaluate the line, surface and volume integrals and converting them from one to another

TEXT BOOKS

1.B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Editions, 2010
2.Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006

REFERENCES

1.G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002
2.Paras Ram, Engineering Mathematics, 2nd Edition, CBS Publishers
3.S.L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18PH03) ENGINEERING PHYSICS

B. Tech– II Sem. (Civil Engineering)

L	T	P	C
4	0	0	4

Prerequisites:NIL

SYLLABUS CONTENT:

Unit I: Mechanics

Transformation of scalars and vectors under Rotation transformation; Forces in Nature; Newton's laws and its completeness in describing particle motion; Form invariance of Newton's Second Law; Solving Newton's equations of motion in polar coordinates; Problems including constraints and friction; Extension to cylindrical and spherical coordinates.

Unit II: Rigid body dynamics

Definition and motion of a rigid body in the plane; Rotation in the plane; Kinematics in a coordinate system rotating and translating in the plane; Angular momentum about a point of a rigid body in planar motion; Euler's law of motion, their independence from Newton's laws. And their necessity in describing rigid body motion; Examples

Unit III: Quantum Mechanics

Failures of classical mechanics, Introduction to Quantum mechanics, Wave nature of Particles, Time-dependent and time independent Schrodinger equation for wave function, probability current, Expectation values, Free-particle wave function and wave-packets, Uncertainty principle. Particle in one dimension box.

Unit IV: Semiconductor Physics

Introduction to intrinsic and extrinsic semiconductors, Fermi level, Effect of carrier concentration and temperature on Fermi level, Energy diagram of p-n-diode, characterization and working of LED and Solar cells.

Unit V Lasers

Characteristics of lasers, absorption, spontaneous emission, stimulated emission. Einstein's theory of matter radiation interaction and A and B Coefficients; amplification of light by population inversion, Ruby laser, He-Ne laser, CO_2 laser, Nd-YAG laser, applications of lasers in science, Engineering and Medicine.

COURSE OUTCOMES:

CO1: The student learns about transformation concept
CO2: The student gains knowledge on basics of rigid body dynamics
CO3: Learns about basics of quantum mechanics.
CO4: Characterization and study of properties of optodevices helps the students to prepare new materials for various engineering applications.
CO5: Gain knowledge about lasers which leads to new innovations and improvements.

Text Books

1.A Text Book of Engineering Physics, Dr. M.N. Avadhanulu, Dr. P.G. Kshrisagar-S.Chand.
2.Engineering Physics, P.K.Palani Swamy, Scitech Publicatiobs.
3.Engineering Physics V. Rajendran, Tata Mc Gram Hill Book Publishers.
4.Modern Engineering Physics (Vol-I & II), Dr. K. Vijaya Kumar, Dr. S. Chandralingam – S.Chand.

References

1.J. Singh Semiconductor Optoelectronics: Physics and Technology, Mc. Graw-Hill inc(1995).
2.O.Svelto, "Principles of Lasers".
3."Introduction to Mechanics", M.K. Verma, Universities press.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE01) ENGINEERING MECHANICS

B. Tech– II Sem. (CIVIL, MECH)

L	T	P	C
3	1	0	4

Prerequisites:NIL

SYLLABUS CONTENT:

UNIT – I
Introduction-Specification of force vector, Formation of Force Vectors, Moment of Force–Cross product – Problems, Resultant of a general force system in space, Degrees of freedom - Equilibrium Equations, Kinematics – Kinetics – De' Alemberts principle, Degree of Constraints – Free body diagrams.

UNIT II
Spatial Force systems – Concurrent force systems – Equilibrium equations – Problems, Problems (Vector approach) – Tension Coefficient method, Problems (Tension Coefficient method), Parallel force systems - problems, Center of Parallel force system – Problems.

UNIT-III
Coplanar Force Systems - Introduction – Equilibrium equations – All systems, Problems on Coplanar Concurrent force system, Coplanar Parallel force system, Coplanar General force system – Point of action, Method of joints, Method of sections, Method of members,Friction–Coulombslaws of dry friction Limitingfriction,ProblemsonWedgefriction, BeltFriction-problems.

UNIT – IV
Mechanics of Deformable Bodies - Stress & Strain at a point- Normal and shear stresses, Axial deformations – Problems on prismatic shaft, tapered shaft and deformation due to self-weight, Deformation of Stepped shaft due to axial loading, Poisson's Ratio – Bulk Modulus - Problems, change in dimensions and volume.
Centroid & Moment of Inertia - Centroid & M.I – Arial & Mass M.I – Radius of Gyration, Parallel axis– Perpendicular axis theorem – Simple Problems.

UNIT-V
Dynamics of Particles - Rectilinear Motion – Kinematics Problems, Kinetics – Problems, Work & Energy – Impulse Moment, Direct Central Impact – coefficient of restitution, Curvilinear Motion – Projectile Motion, Work & Energy in Curvilinear motion.
Dynamics of Rigid Bodies – Rigid body rotation – Kinematics-Kinetics, Problems Work& Energy in Rigid body rotation, Plane Motion – Kinematics, Problem – Instantaneous center of rotation.

COURSE OUTCOMES:

The students will be able to

CO1: Understand the force system and Degree of freedom

CO2: Understand the special force system

CO3: Develop algebraic relationships among Key physical parameters and variables based on analysis of a specifiedsystem

CO4: Apply the principles of mechanics for solving practical problems related to equilibrium of rigid bodies and particle inmotion.

CO5: Apply the dynamic ,motion principles in engineering field

TEXT BOOKS:

1.Beer, F.P and Johnston Jr. E.R., "Vector Mechanics for Engineers (In SI Units): Statics and Dynamics", 8 th Edition, Tata McGraw-Hill Publishing company, New Delhi (2004).

2.Vela Murali, "Engineering Mechanics", Oxford University Press (2010)

REFERENCES:

1.Bhavikatti, S.S and Rajashekarappa, K.G., "Engineering Mechanics", New Age International (P) Limited Publishers, 1998.

2.Hibbeller, R.C and Ashok Gupta, "Engineering Mechanics: Statics and Dynamics", 11 Edition, Pearson Education 2010.

3.Irving H. Shames and Krishna Mohana Rao. G., "Engineering Mechanics – Statics and Dynamics", 7th Edition, Pearson Education 2012.

4.Meriam J.L. and Kraige L.G., " Engineering Mechanics- Statics - Volume 1, Dynamics- Volume 2", Third Edition, John Wiley & Sons,1993.

5.Rajasekaran S and Sankarasubramanian G., "Engineering Mechanics Statics and Dynamics", 3rd Edition, Vikas Publishing House Pvt. Ltd., 2005.

6.Timoshenko and Young, Engineering Mechanics, 3rd Ed, McGraw Hill Publishers,2006.

7. Gere and Timoshenko, Mechanics of Materials, 2nd Ed, CBS Publishers,2011.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CS50) OOPs and DATA STRUCTURES

B. Tech– II Sem. (CIVIL, MECH)

L	T	P	C
3	0	0	3

Prerequisites: NIL

SYLLABUS CONTENT:

UNIT-1

Basic concepts of Object Oriented Programming, Benefits of OOP. C++ fundamentals. (TB-1: Ch 1 & 2. Pg.No.6-11 & 16-26).

Classes and Objects: Class Definition, Objects, Defining and accessing class members, Access specifiers, Inline functions, static data members & member functions, friend functions. (TB-1: Ch 1 & 5. Pg.No.90-115).

Constructors and Destructors: Introduction, types of constructors, Constructor overloading, Destructors, Dynamic memory allocation and de-allocation -new and delete. (TB-1: Ch 6. Pg.No. 131-148).

UNIT-2

Function Overloading. (TB-1: Ch 4. Pg.No.82-84).

Operator Overloading: Definition, Overloading Unary and Binary Operators (TB-1: Ch 7. Pg.No. 155-161).

Inheritance: Basics, types of inheritance- single, multilevel, multiple, hierarchical and hybrid. Virtual Base Classes, Abstract classes (TB-1: Ch 8 Pg.No.182 -210).

Virtual functions and Runtime Polymorphism, pure virtual functions. (TB-1: Ch97. Pg.No. 246-252).

Templates: Class Templates, Function Templates (TB-1: Ch 12 Pg.No. 323-336).

UNIT-3

Basic data structures: Algorithms, Performance Analysis – Time Complexity and Space Complexity. (TB-2: Ch 1 Pg. No. 14-20).

The Linked List ADT – Basic Concepts, Single Linked List Operations -Insert, Delete, Search.

Doubly Linked List, Circular Linked List (TB-2: Ch 3. Pg.No. 81-93, 113-119).

The Stack ADT- Definition, Basic Stack Operations-Push & Pop, Stack Representation-Array & Linked List. Infix to Postfix conversion. (TB-2: Ch 4. Pg.No. 156-165).

The Queue ADT- Definition, Array & Linked list implementation, operations-Enqueue, Dequeue (TB-2: Ch5. Pg.No.217-220).

UNIT-4

Hashing: Hash Table Representation, Hash functions, Collision Resolution (TB-2: Ch 2. Pg.No. 49-67).

Trees: Introduction to trees, Binary Trees, Binary Tree Representation, Binary Tree Traversals (TB-2: Ch 7. Pg.No. 305-324).

Search Trees: Binary Search Trees, Operations on Binary Search Trees, AVL Trees, Rotations on AVL Trees, Operations on AVL Trees. (TB-2: Ch 8. Pg.No. 338-372).

UNIT-5

Priority Queues: Definition, ADT, Realizing a priority queue using Heaps, Insertion, Deletion. (TB-2: Ch 9. Pg.No. 416-423).

Graphs: Basic terminology, Graph Storage Structure – Adjacency Matrix, Adjacency List. Graph Traversals – Depth First Search, Breadth First Search (TB-2: Ch 12. Pg.No. 560-570).

Course Outcomes:

CO1: To find the difference between structured programming and object oriented programming language and understanding the features of C++ supporting object oriented programming.

CO2:To explain and apply the major object oriented concepts to implement object oriented programs in C++.

CO3: To build the basic knowledge to handle operations like insertions, deletions, searching, and traversing mechanisms in linear data structures.

CO4: Examine with advanced data structure such as hash tables and priority queue data structures.

CO5: Ability to have knowledge on trees, balanced trees, graphs and developing C++ code for non-linear data structures, and different sorting techniques.

TEXT BOOKS:

1. E. Balaguruswamy, *"Object Oriented Programming with C++"*, 5th Edition, Mc Graw-Hill Education India.

2. Richard F. Gilberg & Behrouz A. Forouzan, *"Data structures A Pseudo code Approach with C++ "*, Thomson Brooks Cole.

REFERENCE BOOKS:

1.Mark Allen Weiss, "Data structures and Algorithm Analysis in C++", Pearson Education. Ltd., Second Edition.

2.Adam Drozdek , "Data structures and algorithms in C++", 3rd Edition, ,Cengage Learning.

3.Bjarne Stroustrup, " The C++ Programming Language", 4th Edition.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18ME02) ENGINEERING WORKSHOP/IT WORKSHOP

B. Tech– II Sem. (Common to all branches)

L	T	P	C
0	0	3	1.5

Prerequisites:NIL

SYLLABUS CONTENT:

UNIT – I

TRADES FOR EXERCISES: (Any six trades from the following for Mechanical Engineering Branch & Any four trades for all other Branches with minimum of two exercises in each trade)

1. Carpentry
2. Fitting
3. Tin – Smithy
4. Black Smithy
5. House – wiring
6. Foundry
7. Plumbing
8. Soldering

UNIT - II

TRADES FOR DEMONSTRATION & EXPOSURE

1. Demonstration of Power tools & wiring
2. Welding.
3. Machine Shop

UNIT – III

IT WORKSHOP I: Computer hardware, identification of parts, Disassembly, Assembly of computer to working condition, simple diagnostic exercises.

IT WORKSHOP II: Installation of operating system windows and Linux simple diagnostic exercises.

TEXTBOOKS:

1. Workshop Manual – P.Kannaiah / K.L.Narayana/Scitech Publishers.
2. Workshop Manual – Venkat Reddy/BS Publication / 6th Edition.

COURSE OUTCOMES:

The students will be able to

CO1: Know the fundamental knowledge of various trades and their usage in real time Applications.

CO2: Gain knowledge of Foundry, Welding, Black smithy, Fitting, Machine shop and house wiring.

CO3: Understand the basis for analyzing power tools in construction and wood working, electrical engineering and mechanical engineering.

CO4: Use basic concepts of computer hardware for assembly and disassembly.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18PH04) ENGINEERING PHYSICS LAB

B. Tech– II Sem. (CIVIL MECH)

L	T	P	C
0	0	3	1.5

Prerequisites: NIL

SYLLABUS CONTENT:

Sl. No.	Name of the Experiment
1	Torsional Pendulum-determination of rigidity modulus of material of a wire.
2	Determination of energy gap of material of p-n junction.
3	Study LED diode V-I and P-I Characteristics.
4	Study LASER diode V-I and L-I Characteristics.
5	Bending losses of optical fibres and evaluation of numerical aperture of a given optical fibre.
6	Study of Decay of charge & determination of time constant of an RC circuit.
7	Study of Characteristics of solar cell.
8	Determination of wavelength of Laser source – Diffraction grating.
9	Determination of frequency of AC supply – sonometer.
10	Determination of wavelength of monochromatic source using diffraction grating.

Outcomes:

CO1: The laboratory course helps the student how to operate different equipments related to engineering.

CO2: It also allows the student to develop experimental skills to design new experiments in engineering.

CO3: The course enlightens the student about modern equipment like solar cell, optical fibre etc.,

CO4: With the exposure to these experiments, the student can compare the theory and correlate with experiment.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CS51) OOPs & DATA STRUCTURES LAB

B. Tech– II Sem. (CIVIL, MECH)

L	T	P	C
0	0	2	1

Prerequisites:NIL

SYLLABUS CONTENT:

1.Write a C++ program to demonstrate class.
2.Write a C++ program on constructor.
3.Write a C++ program on inline functions.
4.Write a C++ program on this pointer.
5.Write a C++ program on function overloading.
6.Write a C++ program on operator overloading.
7.Write a C++ program that illustrates how run time polymorphism is achieved.
8.Write a C++ program on multiple inheritance.
9.Write a C++ program to demonstrate templates.
10.Write a C++ program for single linked list operations.
11.Write a C++ program to implement Stack ADT using array.
12.Write a C++ program to implement Queue ADT using array.
13.Write a C++ program to implement Stack ADT using linked list.
14.Write a C++ program to implement Queue ADT using linked list.
15.Write a C++ program that uses functions to traverse the given binary tree in a)Preorderb) Inorderc) Postorder
16.Write a C++ program to implement DFS and BFS for a graph.

Course Outcomes:

CO1: Apply the oops concepts like inheritance, polymorphism, abstraction and many more to solve probles using c++.
CO2: Understand basic data structures such as arrays, linked lists, stacks and queues.
CO3: Able to write programs on hash functions and concepts of collision and its resolution methods , graphs, trees and heaps.
CO4: Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18MA04) PROBABILITY AND STATISTICS

B. Tech– III Sem.

L	T	P	C
3	1	0	4

Prerequisites: NIL

SYLLABUS CONTENT:

UNIT-I: Basic Probability

Probability spaces, conditional probability, independent events and Bayes' theorem. Random variables: Discrete and continuous random variables, Expectation of Random Variables, Moments, Variance of random variables, Chebyshev's Inequality. Binomial, Poisson, evaluation of statistical parameters for these distributions, Poisson approximation to the binomial distribution.

UNIT-III: Continuous Random variable & Distributions

Continuous random variables and their properties, distribution functions and densities,Normal, exponential and gamma distributions, evaluation of statistical parameters for these distributions.

UNIT-IV: Applied Statistics

Curve fitting by the method of least squares: Fitting of straight lines, second degree parabolas and more general curves, Correlation and regression, Rank correlation.

UNIT-V: Testing of Hypothesis

Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means, Test for single mean, difference of means for small samples, test for ratio of variances for small samples.

COURSE OUTCOMES:

Students who successfully complete this course should be able to:

CO1: Use probability theory and deals with modelling uncertainty and apply discrete and continuous probability, in order to evaluate the probability of real world events.

CO2: Develop discrete probability distributions and its applications, and use these techniques to generate data from Binomial and Poisson Distributions.

CO3: Develop continuous probability distributions and its applications, and use these techniques to generate data from Normal Distribution.

CO4: Perform correlation analysis, in order to estimate the nature and the strength of the linear relationship that may exist between two variables of interest, Perform regression analysis to estimate the magnitude of change in one variable due to a given change in the other variable.

CO5: Construct confidence interval estimates for population parameters and conduct hypothesis tests concerning population parameters, for single and multiple populations based on sample data. And also perform Student T-test, F-test and X^2- test (chi-square).

Text Books

1. Probability and statistics for engineers and scientists, 9th Edition, Pearson Publications, Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, keying Ye.
2. Fundamentals of Mathematical Statistics, Sultan Chand & Sons Publications, S C Guptha and V.K. Kapoor.

References

1. Probability and Statistics for Engineers, 8th Edition, Miller and Freund's, Pearson Educations.

A First Course in Probability, 6th Ed., Pearson Education India, 2002, S. Ross.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE02) STRENGTH OF MATERIALS – I

B. Tech– III Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Engineering Mechanics

SYLLABUS CONTENT:

UNIT – I STRESS, STRAIN AND DEFORMATION OF SOLIDS

Simple Stresses and strains – Elastic constants – Relationship between elastic constants – Stress Strain Diagram – Ultimate Stress – Yield Stress – Deformation of axially loaded member –Composite Bars - Thermal Stresses – State of Stress in two dimensions – Stresses on inclined planes – Principal Stresses and Principal Planes – Maximum shear stress – Mohr's circle method.

UNIT-II SHEAR FORCE AND BENDING MOMENT

Types of supports –Classification of beams, Concept of shear force and bending moment, Shear force and Bending moment diagram for Cantilever, simply supported including overhanging beams subjected to point loads, uniformly distributed load, uniformly varying loads and combination of these loads, point of contra flexure-Relation between S.F and B.M and rate of loading at a section of a beam.

UNIT-III FLEXURAL AND SHEAR STRESSES

Theory of simple bending – Assumptions – Derivation of bending equation – Section Modulus. Determination of flexural/bending stresses of rectangular, circular, I and Channel sections. Derivation of formula for shear stress distribution – Shear stress distribution across various beam sections like rectangular, circular, I and channel sections.

UNIT-IV DEFLECTION OF BEAMS

Elastic curve – Governing differential equation – Double integration method – Macaulay's method – Area moment method – conjugate beam method for computation of the slope and deflection of determinant beams.

UNIT - V TORSION AND SPRINGS

Theory of Torsion – Stresses and Deformations in Solid and Hollow Circular Shafts – combined bending moment and torsion of shafts – Power transmitted to shaft – Shaft in series and parallel – Closed and Open Coiled helical springs – springs in series and parallel – Design of buffer springs.

Course Outcomes:

After the completion of this course, the students should be able to

CO1: Outline the various stresses and strains.
CO2: Draw the shear force and Bending moment diagram for different beams.
CO3: Evaluate the flexural and shear stresses for various sections.
CO4: Calculate the slope and deflection of determinant beams.
CO5: Identify the concepts of torsion and spring subjected to loading.

Text Books:

1. Rajput.R.K. "Strength of Materials", S.Chand and Co, New Delhi, 2015.
2. Punmia.B.C., Ashok Kumar Jain and Arun Kumar Jain, SMTS –I Strength of materials, Laxmi publications. New Delhi, 2015
3. Rattan . S. S, "Strength of Materials", Tata McGraw Hill Education Private Limited, New Delhi, 2012
4. Bansal. R.K. "Strength of Materials", Laxmi Publications Pvt. Ltd., New Delhi, 2010

Reference Books:

1. Timoshenko and Gere, "*Mechanics of Materials*", *PWS* Publishing Company, Boston, 4thedn., 1997.
2. H.J.Shah and S.B. Junnarkar, "*Mechanics of Structures Vol.-I. and Vol.-II*", Charotar publishing House Pvt. Ltd., Anand, 31stedn., 2014.
3. Andrew Pytel and Ferdinand L. Singer, "*Strength of Materials*", Harper and Row publishers, New York, 4th edn., 2011.
4. Ferdinand P Beer et al., "*Mechanics of Materials*", Tata McGraw Hill Education Pvt. Ltd

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE03) FLUID MECHANICS

B. Tech– III Sem.

L	T	P	C
3	0	0	3

Prerequisites: Engineering Mechanics

SYLLABUS CONTENT:

UNIT-I

INTRODUCTION : Dimensions and units – Physical properties of fluids, specific gravity, viscosity, surface tension, vapor pressure and their influences on fluid motionpressure at a point, Pascal's law, Hydrostatic law – atmospheric, gauge and vacuum pressure- measurement of pressure. Pressure gauges, Manometers: differential and Micro Manometers. Hydrostatic forces on submerged plane, Horizontal, Vertical, inclined and curved surfaces – Center of pressure. Derivations and problems.

UNTI – II

BUOYANCY AND FLOATATION: Stability of bodies, meta centre, liquids in relative equilibrium.

FLUID KINEMATICS: Description of fluid flow, Streamline, path line and streak lines and stream tube. Classification of flows: Steady, unsteady, uniform, non uniform, laminar, turbulent, rotational and irrotational flows – Equation of continuity for one, two, three dimensional flows – stream and velocity potential functions,

UNIT – III

FLUID DYNAMICS AND MEASUREMENT OF FLOW: Surface and body forces – Euler's and Bernoulli's equations for flow along a streamline for 3-D flow, (Navier – stokes equations (Explanationary) Momentum equation and its application – forces on pipe bend. Pitot tube, Venturi meter and orifice meter – classification of orifices, flow over rectangular, triangular and trapezoidal and Stepped notches –Broad crested weirs

UNIT – IV

CLOSED CONDUIT FLOW: Reynold's experiment – Characteristics of Laminar & Turbulent flows. Laws of Fluid friction – Darcy's equation,variation of friction factor with Reynold's number – Moody's Chart, Minor losses – pipes in series – pipes in parallel – Total energy line and hydraulic gradient line. Pipe network problems, Flow through long tubes.

UNIT – V

NAVIER STOKE'S EQUATIONS AND BOUNDARY LAYER THEORY: Approximate Solutions of Navier Stoke's Equations – Boundary layer – concepts, Prandtl contribution, Characteristics of boundary layer along a thin flat plate, Vonkarmen momentum integral equation, laminar and turbulent Boundary layers (no derivations) BL in transition, separation of BL, control of BL, flow around submerged objects-Drag and Lift- Magnus effect.

COURSE OUTCOMES:

After the completion of this course, the students should be able to

CO1: Demonstrate the basic properties of fluids and the principles of manometer.
CO2: Compute dimensional flows of a pipe applying continuity equation.
CO3: Calculate measurement of flow by Eulers and Bernoulli's equation.
CO4: Differentiate laminar and turbulent flow and various losses in pipe flow.
CO5: Determine drag force and lift force of hydraulic structure.

TEXT BOOKS:

1.F M White. "Fluid Mechanics", Tata McGraw Hill Publication 2011.
2.K.L.Kumar, "Engineering Fluid Mechanics", S.Chand & Co., 2010.
3.Modi and Seth, "Fluid Mechanics", Standard book house, 2002.
4.Subramanya.K" Fluid Mechanics and Hydraulic Machines", Tata McGraw Hill Education Private Limited, New Delhi, 2010.
5.Rajput.R.K. "Fluid Mechanics", S.Chand and Co, New Delhi, 2008.

REFERENCES:

1.J.F.Douglas, J.M. Gaserek and J.A.Swaffirld, " Fluid Mechanics", PHI, 2011.
2.S.K.Som & G.Biswas, "Introduction to Fluid Mechanics", Tata Mc.Grawhill publishers Pvt. Ltd., 2003.
3.A.K. Mohanty, "Fluid Mehanics", Prentice Hall of India Pvt. Ltd., New Delhi, 1994.
4.Edward J. Shaughnessy, Jr, Ira M. Katz and James P. Schaffer, "Introduction to Fluid Mechanics", Oxford University Press, New Delhi. 2005.
5.James A Fay. "Introduction to Fluid Mechanics", PHI, 1994.
6.Victor L. Streeter and E. Benjamin Wylie, "Fluid Mechanics", Mc.Grawhill publishers Pvt. Ltd, 1985.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE04) SURVEYING

B. Tech– III Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Engineering Mechanics

SYLLABUS CONTENT:

UNIT I FUNDAMENTALS OF CONVENTIONAL SURVEYING AND LEVELLING

Classifications and basic principles of surveying - Equipment and accessories for ranging and chaining - Methods of ranging - Compass - Types of Compass - Basic Principles- Bearing – Types - True Bearing - Magnetic Bearing - Levelling- Principles and theory of Levelling – Datum- - Bench Marks – Temporary and Permanent Adjustments- Methods of Levelling- Booking – Reduction - Sources of errors in Levelling - Curvature and refraction.

UNIT II THEODOLITE AND TACHEOMETRIC SURVEYING

Horizontal and vertical angle measurements - Temporary and permanent adjustments - Heights and distances - Tacheometer - Stadia Constants - Analytic Lens -Tangential and Stadia Tacheometry surveying - Contour – Contouring – Characteristics of contours – Methods of contouring – Tacheometric contouring - Contour gradient – Uses of contour plan and map

UNIT III CONTROL SURVEYING AND ADJUSTMENT

Horizontal and vertical control – Methods – specifications – triangulation- baseline – satellite stations – reduction to centre- trigonometrical levelling – single and reciprocal observations – traversing – Gale's table. - Errors Sources- precautions and corrections – classification of errors – true and most probable values - weighed observations method of equal shifts – principle of least squares - normal equation – correlates- level nets- adjustment of simple triangulation networks.

UNIT IV ADVANCED TOPICS IN SURVEYING

Hydrographic Surveying – Tides – MSL – Sounding methods – Three point problem – Strength of fix – astronomical Surveying – Field observations and determination of Azimuth by altitude and hour angle methods –.Astronomical terms and definitions - Motion of sun and stars - Celestial coordinate systems - different time systems - Nautical Almanac - Apparent altitude and corrections - Field observations and determination of time, longitude, latitude and azimuth by altitude and hour angle method

UNIT V MODERN SURVEYING

Total Station : Advantages - Fundamental quantities measured - Parts and accessories - working principle - On board calculations - Field procedure - Errors and Good practices in using Total Station GPS Surveying : Different segments - space, control and user segments - satellite configuration - signal structure - Orbit determination and representation - Anti Spoofing and Selective Availability - Task of control segment - Hand Held and Geodetic receivers - data processing - Traversing and triangulation.

COURSE OUTCOMES:

After the completion of this course, the students should be able to

CO1 : Identify the classification of surveying and its instruments.
CO2: Calculate the horizontal and vertical angle using Tacheometric surveying.
CO3: Understand the process of control surveying and adjustments.
CO4: Know the concept of Hydrographic and Astronomical surveying.
CO5: Understand the principle of Total station and GPS surveying.

TEXT BOOKS:

1.B.C. Punmia & Ashok kumar Jain, "*SurveyingVolume I and II*", Laxmi Publications, 16th edn., 2011.
2.S.K. Duggal, "*SurveyingVolume1 and II*", McGraw Hill Education (India) Pvt.Ltd, 2015.
3.T.P. Kanetker and S.V. Kulkarni, "*Surveying and LevelingVolume I and II*", , 24th edn., 2014.
4.Venkatramaiah, Text book of Surveying, University press, New Delhi, 2014

REFERENCE BOOKS:

1.Dr. K.R. Arora, "*SurveyingVolume I and II*", Standard Book House, 15th edn., 2015.
2.R. Subramanian, "*Surveying and Leveling*", Oxford University Press, New Delhi, 2ndedn., 2007.
3.S.K.Roy, "*Fundamentals of Surveying*", PHI Learning Private Limited, New Delhi, 2nd edn.,2010.
4.Alfred Leick, "GPS satellite surveying", John Wiley & Sons Inc., 3rd Edition, 2004.
5.GuochengXu, "GPS Theory , Algorithms and Applications", Springer – Berlin, 2003.
6.SatheeshGopi, rasathishkumar, N. madhu, "Advanced Surveying, Total Station GPS and Remote Sensing" Pearson education, 2007.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18EE02) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

B. Tech– III Sem.

L	T	P	C
3	0	0	3

Prerequisites:NIL

SYLLABUS CONTENT:

UNIT-I: Electrical Circuits: Circuits concept, R-L-C Parameters, Voltage and Current sources, Source Transformation, V–I relationship for Passive elements, Kirchoff's Laws, Network reduction techniques – series, parallel, series parallel, star-delta & star-delta transformations, Nodal Analysis, Mesh analysis with DC excitations. Network Theorems – Thevenin's, Norton's, Maximum Power Transfer, Superposition, Reciprocity Theorems with DC excitation.

UNIT- II: Single Phase AC Circuits – R.M.S. and Average values, Form Factor, steady state analysis of series, Parallel and Series parallel Combinations of R, L and C with Sinusoidal excitation, concept of reactance, Impedance, Susceptance and Admittance – phase and phase difference, Concept of Power Factor, j-notation, complex and Polar forms of representation. Three Phase AC Circuits: Production of 3 -ϕ Voltages, Voltage & Current relationships of Line and Phase values for Star and Delta connections.

UNIT- III: D.C.Machines: Constructional features, Methods of Excitation, E.M.F. Equation and Applications, Torque development in D.C motor, Characteristics of DC motors, losses, Efficiency, Swinburne's test, Speed control of DC Shunt motors Single Phase Transformers: Construction and principle of operation, 3-Phase Induction Motor: Constructional features, Principle of Operation (Basic fundamentals only)

UNIT- IV: P-N Junction Diode – Diode equation, Energy Band diagram, V-I characteristic, Temperature dependence, Ideal versus practical, Static and dynamic resistances, Equivalent circuit. Rectifiers and Filters – The P-N junction as a rectifier – A Half Wave Rectifier, Ripple Factor, Full Wave Rectifier, Bridge Rectifier, Filters – Inductor Filters, Capacitor Filters, Lsection Filters, π- section Filters.

UNIT- V: Bipolar Junction Transistor (BJT) – Construction, Principle of Operation, CB, CE and CC configurations. Junction Field Effect Transistor – Construction, Principle of Operation, V-I Characteristic, Comparison of BJT and FET, Zener Diode and SCR Devices- Zener diode characteristics, Use of Zener diode as simple regulator, Breakdown Mechanisms in Zener diode, Principle of Operation of SCR.(Basic fundamentals only)

Text Books:

1. Electronic Devices and Circuits – R.L. Boylston and Louis Nashelsky, PEI/PHI, 9th Ed, 2006.
2. Engineering circuit analysis- by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6th edition.
3. Electrical Machines – by P.S.Bimbra

References:

1. Introduction to Electronic Devices and Circuits-Rober T. Paynter, Pearson Education.
2. Electronic Devices and Circuits – K. Lal Kishore, B.S. Publications, 2nd Edition, 2005.
3. Electrical Machines – by J.B.Gupta.
4. Network Theory by N.C.Jagan&C.Lakshminarayana, B.S. Publications.
5. Network Theory by Sudhakar, Shyam Mohan Palli, TMH.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE05) STRENGTH OF MATERIALS LAB

B. Tech– III Sem.

L	T	P	C
0	0	2	1

Pre Requisites: Strength of Materials Theory

LIST OF EXPERIMENTS:

1. Tension test on mild steel & Tor steel
2. Bending test on cantilever beam
3. Bending test on simply supported beam
4. Torsion test
5. Rockwell hardness Test
6. Brinells hardness test
7. Spring Test
8. Compression test on wood/Concrete
9. Impact test
10. Shear Test

Course Outcomes:

After the completion of this course, the students should be able to

CO1: Identify the bending behavior of beams using bending test.
CO2: Determine the behavior of material under torsion.
CO3: Determine the hardness of materials using different test.
CO4: Find out the characteristic of material using compression, impact and shear test.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE06) SURVEYING LAB

B. Tech– III Sem.

L	T	P	C
0	0	3	1.5

Pre Requisites: Surveying theory

LIST OF EXERCISES:

Chain Survey

1. Study of chains and its accessories, Aligning, Ranging, Chaining and Marking Perpendicular offset
2. Setting out works – Foundation marking using tapes single Room and Double Room

Compass Survey

3. Compass Traversing – Measuring Bearings & arriving included angles Levelling - Study of levels and levelling staff
4. Fly levelling using a Dumpy level &Tilting level
5. Check levelling

Theodolite - Study of Theodolite

6. Measurements of horizontal angles by reiteration and repetition and vertical angles
7. Determination of elevation of an object using the single plane method when base is accessible/inaccessible.

Tacheometry – Tangential system – Stadia system

8. Determination of Tacheometric Constants
9. Heights and distances by stadia Tacheometry
10. Heights and distances by Tangential Tacheometry

Total Station - Study of Total Station, Measuring Horizontal and vertical angles

11. Traverse using the total station and Area of Traverse
12. Determination of distance and difference in elevation between two inaccessible points using the total station

COURSE OUTCOMES:

After the completion of this course, the students should be able to

CO 1: Calculate area of given plot/points using chain survey.
CO 2: Determine the angle/distance of given points using compass survey.
CO 3: Find out the angle, distance and height of the given points using theodolite surveying
CO 4: Determine the distance of the given points using Total station

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18EE03) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB

B. Tech– III Sem.

L	T	P	C
0	0	3	1.5

Prerequisites:Basic Electrical and Electronics Engineering Theory

LIST OF EXPERIMENTS

1. Verification of Kirchhoff"s Laws.
2. Verification of Superposition and Reciprocity Theorems.
3. Verification of Thevenin's and Maximum Power transfer theorem.
4. Speed Control of DC Shunt Motor.
5. Swinburne's Test on DC shunt machine.
6. Brake test on DC shunt motor.
7. OC & SC tests on single phase transformer.
8. PN Junction Diode characteristics (Forward bias & Reverse bias).
9. Transistor CE Characteristics (Input and Output)
10. Rectifier with and without filters (Full wave & Half wave)

Course outcomes:

After the course completion, the students are able to

CO1:Learn to simplify complex electric and electronic circuits by applying the KVL and KCL laws

CO2:Identify the optimal loading on the system.

CO3:Analyze the performance of DC machines

CO4: Identify and analyze the performance and operation of semi conducting devices.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18MC02) ENVIRONMENTAL SCIENCES

B. Tech– III Sem.

L	T	P	C
2	0	0	0

Prerequisites: Nil

SYLLABUS CONTENT

UNIT-I
Ecosystems:
Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.

UNIT-II
Natural Resources:
Classification of Resources: Living and Non-Living resources, **water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT-III
Biodiversity and Biotic Resources:
Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Field visit. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV:
Environmental Pollution and Control Technologies:
Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts: C**limate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol. NAPCC-GoI Initiatives.

UNIT-V
Environmental Policy, Legislation & EIA:

Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development Goals, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

Course Outcomes:

After the completion of this course, the student should be able to

CO1: Recall previously learned ecosystem and find how the biodiversity changes went in the environment.

CO2: Demonstrate outlines of types of pollutions and related to day-to-day life.

CO3: Organize important seminars on natural resources.

CO4: Apply models of food chains and energy flow models to solve the identified parameters.

CO5: Classify the types of pollutants and distinguish the functions of sustainable development that take part in the environment.

TEXT BOOKS:

1.Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2.Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1.Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
2.Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3.Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4.Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5.Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6.Introduction to Environmental Science by Y. Anjaneyulu, BS.Publications.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE07) BUILDING MATERIALS AND CONSTRUCTION PLANNING

B. Tech– IV Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT

UNIT-I

INTRODUCTION: Identification of materials for Construction in Civil EngineeringPractice, Physical and Mechanical properties of building Materials.

STONES: Classification of Stones, Properties of Stones, Characteristic of good buildingStone, Tests on Stones.

BRICKS: Composition of good brick, Manufacturing process of bricks, Characteristic ofgood building bricks, Classification of bricks, Tests on Bricks.

UNIT-II

LIME: Source, Different types of Lime, Calcination of Lime, Properties of Lime, Tests on Limes.

CEMENT: Raw Materials, Manufacturing Process, Types of Cement, Hydration of Cement, Properties of Cement, IS-Recommendation.

TIMBER: Classification of trees, Seasoning of Timbers, Preservation of Timber, Industrial Timber, Defects in Timber.

CONCRETE: Manufacturing Process of Cement Concrete, grade designation, Workability, Segregation, Bleeding.

MISCELLANIOUS: GI/Fiber reinforced glass brick, Glass, Plastics, Asbestos, Thermo coal, Flyash, and Paints.

UNIT-III

BUILDING COMPONENTS:

WALLS: Types of Walls, Thickness of Walls, Cavity Wall.

OPENING IN BUILDINGS:Doors and Windows, Types, Sizes and suitable for different location, Ventilators, lintels, Arches.

ROOFS: Types: RCC Roof, Madras Terrace and Jack arch Roof, Method of Construction.

STAIRCASE: Type of Staircases, Design of Staircase.

UNIT-IV

BUILDING PLANNING: Functional Planning of Buildings-Components of Buildings-IS/NBC Recommendations.

BUILDING SERVICES: Plumbing Services, Water distribution,Sanitary lines and Fittings,Electricals services, Functional Requirements, System of Ventilations, Air-conditioned-Essential and Types, Acoustics, Characteristic absorption, Acoustic Design and SoundInstallation. Fire Protection,Fire Hazardous, Classification of Fire resistant materials and Constructions.

UNIT-V

BUILDING CONSTRUCTION:

MASONARY WORK: Stone Masonry, Dressing of Stones-Specification of stone masonary,Brick Masonry, Bond in Brick Masonry-Specification of Brick Masonry. RCC Brick – Specification of RCC Bricks.

TEMPORARY SUPPORTING STRUCTURE: Centring, Formwork,Scaffolding, Types of Scaffolding, Standard of Scaffolding, Shoring, Underpinning.

FINISHING WORK: Brief Description of Plastering, Pointing, White and Colour washing,Types of Wall Covering, False ceiling Work, Cladding, and Types of Tiles.

Course Outcomes:

After the completion of this course, the students should be able to

CO1: Categorize stone and brick material with their properties
CO2: Contrast the importance of concrete and its properties
CO3: Outline the different building components
CO4: Explain different building services and NBS/IS norms
CO5: Build knowledge about masonry and finishing work

Text Books:

1. S.P Arora and Bindra, "*A Textbook of Building Construction*", Dhanpat Rai and Sons, 4th Edn., 2010.
2. Dr. B.C. Punmia, "*Building construction*", Laxmi Publications Pvt., Ltd, New Delhi, 19th Edn., 2005

Reference Books:

1. S.K. Duggal, "*Building materials*", New Age international Pvt. Ltd., New Delhi
2. S.V. Deodhar, "*Building science and planning*", Khanna Publishers, New Delhi.
3. N.L. Arora and B.L. Gupta, "*Building construction*", Satya prakshan publications, New Delhi.
4. C.Rangwala, K.S. Rangwala and P.S. Rangwala, "*Engineering materials*", Charotar Publishers.
5. B.L.Thereja, A.K.Thereja, "*Electrical Technology Vol. I and II*", S. Chand and Company Ltd, 2005.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE08) STRENGTH OF MATERIALS – II

B. Tech– IV Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Strength of Materials-I

SYLLABUS CONTENT:

UNIT I INDETERMINATE BEAMS
Concept of Analysis - fixed beams - fixed end moments and reactions – sinking and rotation of supports - Theorem of three moments – analysis of continuous beams – shear force and bending moment diagrams.

UNIT II DIRECT AND BENDING STRESSES
Stresses under the combined action of direct loading and bending moment, core of a section-determination of stresses in the case of chimneys, retaining walls and dams-condition for stability-stresses due to direct loading and bending moment about both axis.

UNIT III COLUMNS AND CYLINDERS
Euler's column theory – critical load for prismatic columns with different end conditions – Effective length – limitations - Rankine-Gordon formula - Eccentrically loaded columns – middle third rule - core of a section – Thin cylindrical and spherical shells – stresses and change in dimensions Thick cylinders – Compound cylinders – shrinking on stresses.

UNIT IV STATE OF STRESS IN THREE DIMENSIONS
Stress tensor at a point – Stress invariants - Determination of principal stresses and principal planes - Volumetric strain. Theories of failure: Maximum Principal stress theory – MaximumPrincipal strain theory – Maximum shear stress theory – Strain Energy: Resilience-Gradual, Sudden, and impact loading- Total Strain energy theory – Maximumdistortion energy theory – Application problems

UNIT V UNSYMETRICAL BENDING AND SHEAR CENTRE
Unsymmetrical bending of beams of symmetrical and unsymmetrical sections – Shear Centre -curved beams – Winkler Bach formula – stresses in hooks.

Course Outcomes:
After the completion of this course, the students should be able to
CO1: Analysis the fixed and continuous beams
CO2: Evaluate the direct and bending stresses of different structures
CO3: Determine the critical load of columns and stresses developed in thick and thin cylinders

CO4: Understand the concept of principal stresses and strain energy
CO5: Analyze the unsymmetrical bending of beams and shear centre for different section

Text Books:

1. Rajput R.K. "Strength of Materials (Mechanics of Solids)", S.Chand& company Ltd., New Delhi, 2015.
2. Rattan.S.S., "Strength of Materials", Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2011.
3. Punmia B.C., Ashok Kumar Jain and Arun Kumar Jain,"Theory of Structures" (SMTS) Vol - II, Laxmi Publishing Pvt Ltd, New Delhi 2017.
4. Basavarajiah and Mahadevapa, Strength of Materials, University press, Hyderabad, 2016

Reference Books:

1. Andrew Pytel and Ferdinand L. Singer, "*Strength of Materials*", Harper and Row Publishers, New York, 4th edn., 2011.
2. Ferdinand P Beer et al., "*Mechanics of Materials*", Tata McGraw Hill Education Pvt. Ltd
3. Timoshenko and Gere, "*Mechanics of Materials*", *PWS* Publishing Company, Boston, 4thedn., 1997.
4. H.J.Shah and S.B. Junnarkar, "*Mechanics of Structures Vol.-I. and Vol.-II*", Charotar Publishing House Pvt. Ltd., Anand, 31stedn., 2014.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE09) HYDRAULICS & HYDRAULIC MACHINERY

B. Tech– IV Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Fluid Mechanics

SYLLABUS CONTENT:

UNIT-I

OPEN CHANNEL FLOW: Types of flows - Type of channels – Velocity distribution – Energy and momentum correction factors – Chezy's, Manning's; and Bazin formulae for uniform flow – Most Economical sections. Critical flow: Specific energy-critical depth – computation of critical depth – critical sub-critical and super critical flows. Non uniform flow-Dynamic equation for G.V.F., Mild, Critical, Steep, horizontal and adverse slopes-surface profiles-direct step method- Rapidly varied flow, hydraulic jump, energy dissipation.

UNIT- II

HYDRAULIC SIMILITUDE: Dimensional analysis-Rayleigh's method and Buckingham's pi theorem-study of Hydraulic models – Geometric, kinematic and dynamic similarities-dimensionless numbers – model and prototype relations. Distorted and non-distorted models.

UNIT-III

BASICS OF TURBO MACHINERY: Hydrodynamic force of jets on stationary and moving flat, inclined and curved vanes, jet striking centrally and at tip, velocity triangles at inlet and outlet, expressions for work done and efficiency-Angular momentum principle, Applications to radial flow turbines.

UNIT-IV

HYDRAULIC TURBINES : Layout of a typical Hydropower installation – Heads and efficiencies-classification of turbines-pelton wheel-Francis turbine-Kaplan turbine-working, working proportions, velocity diagram, work done and efficiency, hydraulic design, draft tube – theory and function efficiency. Governing of turbines-surge tanks-unit and specific turbines-unit speed-unit quantity-unit power-specific speed performance characteristics-geometric similarity-cavitation .

UNIT-V

CENTRIFUGAL PUMP: Installation details-classification-types work done- Manometric head-minimum starting speed-losses and efficiencies-specific speedmultistage pumps-pumps in parallel- performance of pumps-characteristic curves- NPSH-cavitation.
Classification of Hydropower plants – Definition of terms – load factor, utilization factor, capacity factor, estimation of hydropower potential.

COURSE OUTCOMES:

After the completion of this course, the students should be able to

CO1: Apply fundamental knowledge in open-channel hydraulics in Civil Engineering.
CO2: Describe dimensional analysis and similarity to develop hydraulic model.
CO3: Understand about the turbo-machines and its efficiency
CO4: Gain knowledge of hydraulic turbines and their operational design.
CO5: Evaluate the performance of centrifugal pumps and hydropower plants.

TEXT BOOKS:

1. K,Subramanya, "Open Channel flow", Tata Mc.Grawhill Publishers-2009.
2. Modi & Seth, "Fluid Mechanics and Hydraulic Machines", Standard book house, New Delhi-2007..
3. D.S. Kumar, "Fluid Mechanics & Fluid Power Engineering", Kataria & Sons-2013.

REFERENCES :

1. K,Subramanya, "Fluid Mechanics and Hydraulic Machines", Tata McGraw Hill Education Pvt. Ltd-2010
2. by V.T.Chow, "Open Channel flow", Mc.Graw Hill book company- 2007.
3. Rajesh Srivastava, "Flow through Open Channels", Oxford University Press – 2007.

*****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE10) STRUCTURAL ANALYSIS - I

B. Tech– IV Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Strength of Materials-I

SYLLABUS CONTENT:

UNIT – I

ENERGY THEOREMS: Introduction-Strain energy in a linear elastic system, expression ofstrain energy due to axial load, bending moment and shear forces - Castigliano"s first theorem-Unit Load Method. Deflections of simple beam and pin- jointed plane trusses. Deflections of statically determinate bent frames.

UNIT – II

TWO HINGED ARCHES: Introduction–Classification of Two hinged Arches–Analysisof two hinged parabolic arches – Secondary stresses in two hinged arches due to temperature and elastic shortening of rib.

THREE HINGED ARCHES – Introduction–Types of Arches– comparison betweenThree hinged and Two hinged Arches. Linear Arch. Eddy"s theorem. Analysis of Three hinged arches. Normal Thrust and radial shear in an arch. Geometrical properties of parabolic and circular arch. Three hinged circular arch at different levels. Absolute maximum bending moment diagram for a three hinged arch.

UNIT – III

CABLES & SUSPENSION BRIDGES: Forces in loaded cables and hanging chains, cableswith supports at different levels, Length of cable, different support conditions, Simple suspension bridges with two hinged and three hinged stiffening girders. BM and SF diagrams influence lines temperature effect on cables and stiffening girders.

UNIT-IV

PROPPED CANTILEVER and CONTINUOUS BEAMS: Determination of static and kinematicindeterminacies for beams- Analysis of Propped cantilever and continuous beams, - Shear force and Bending moment diagrams for Propped Cantilever and Fixed Beams-effect of sinking of support, effect of rotation of a support.Derivation of slope-deflection equation, application to continuous beams with and without settlement of supports, Analysis of continuous beams with and without settlement of supports using Moment Distribution Method. Shear force and Bending moment diagrams, Elastic curve.

UNIT – V PLASTIC ANALYSIS

Plastic theory - Statically indeterminate structures – Plastic moment of resistance – Plasticmodulus – Shape factor – Load factor – Plastic hinge and mechanism – collapse load – Staticand kinematic methods – Upper and lower bound theorems - Plastic analysis of indeterminatebeams and frames.

Course Outcomes

After the completion of this course, the students should be able to

CO1: Build knowledge about energy principles and computing deflection of beams.
CO2: Analyze the different types of arches
CO3: Gain knowledge about cables and suspension bridges
CO4: Analyses the propped cantilever and continuous beam.
CO5: Contrast the concept of plastic analysis of structures.

Text Books:

1.V.N.Vazirani and M.M.Ratwani, "Structural Analysis Vol –I & II",Khanna Publishers, 2015.
2.G.S.Pandit and S.P.Gupta, "Structural Analysis Vol I & II", Tata McGraw Hill Education Pvt. Ltd., 2008.
3.Bhavikatti, S.S,Structural Analysis,Vol.1,& 2, Vikas Publishing House Pvt.Ltd.,NewDelhi-4, 2014.
4.Bhavikatti, S.S, Matrix Method of Structural Analysis, I. K. International Publishing House Pvt.Ltd.,New Delhi-4, 2014.

References:

1.K.U.Muthu *et al.,* "Basic Structural Analysis", I.K.International Publishing House Pvt.Ltd., 2011.
2.R.C.Hibbeler, "Structural Analysis", Pearson Education, 2008.
3.H.J.Shah and S.B.Junnarkar, "Mechanics of Structures Vol –II", Charotar Publishing House Pvt. Ltd., 2012.
4.Devdas Menon, "Structural Analysis", Narosa Publishing House, 2007.
5.C.S.Reddy., "Basic Structural Analysis", Tata McGraw Hill Education Pvt. Ltd., 2010.
6.M.L.Gamhir, "Fundamentals of Structural Analysis", PHI Learning Pvt. Ltd., 2011.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE11) ENGINEERING GEOLOGY

B. Tech– IV Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT - I

INTRODUCTION: Importance of geology from Civil Engineering point of view. Brief study of case histories of failure of some Civil Engineering constructions due to geological drawbacks. Importance of Physical geology, Petrology and Structural geology.

WEATHERING OF ROCKS: Its effect over the properties of rocks importance of weathering with reference to dams, reservoirs and tunnels weathering of common rock like "Granite"

UNIT - II

MINERALOGY: Definition of mineral, Importance of study of minerals, Different methods of study of minerals. Advantages of study of minerals by physical properties.Role of the study of physical properties of minerals in the identification of minerals. Study of physical properties of follow common rock forming minerals: Feldsper, Quartiz, Flint, Jasper, Olivine, Augite, Hornblende, Muscovite, Biotite, Asbestos, Chlorite, Kyanite, Garnet, Talc, Calcite. Study of other common economics minerals such as Pyrite, Hematite, Magnetite, Chrorite, Galena , Pyrolusite, Graphite, Magnesite, and Bauxite.

PETROLOGY: Definition of rock: Geological classification of rocks into igneous, Sedimentary and metamorphic rocks. Dykes and sills, common structures and textures of igneous. Sedimentary and metamorphic rocks. Their distinguishing features, Megascopic and microscopic and microscopic study of Granite, Dolerite, Basalt, Pegmatite, Laerite, Conglomerate, Sand Stone, Shale, Limestone, Gneiss, Schist, Quartzite, Marble and Slate.

UNIT - III

STRUCTURAL GEOLOGY: Outcrop, strike and dip study of common geological structures associating with the rocks such as folds, faults uncomfornities, and joints - their important types and case studies. Their importance Insitu and drift soils, common types of soils, their origin and occurrence in India, Stabilisation of soils. Groundwater, Water table, common types of ground water, springs, cone of depression, geological controls of ground water movement, ground water exploration.

UNIT - IV

EARTH QUAKES: Causes and effects, shield areas and seismic belts. Seismic waves, Richter scale, precautions to be taken for building construction in seismic areas. Landslides, their causes and effect; measures to be taken to prevent their occurrence. Importance of study of ground water, earthquakes and landslides.

IMPORTANCE OF GEOPHYSICAL STUDIES: Principles of geophysical study by Gravity methods. Magnetic methods, Electrical methods. Seismic methods, Radio metric methods and Geothermal method. Special importance of Electrical resistivity methods, and seismic refraction methods. Improvement of competence of sites by grouting etc. Fundamental aspects of Rock mechanics and Environmental Geology.

UNIT - V

GEOLOGY OF DAMS, RESERVOIRS AND TUNNELS: Types of dams and bearing of Geology of site in their selection, Geological Considerations in the selection of a dam site. Analysis of dam failures of the past. Factors Contributing to the success of a reservoir. Geological factors influencing water Lightness and life of reservoirs - Purposes of tunneling, Effects of Tunneling on the ground Role of Geological Considerations (ie. Tithological, structural and ground water) in tunneling over break and lining in tunnels.

COURSE OUTCOMES:

After the completion of this course, the students should be able to

CO1: Understand properties of rocks within the framework of fundamental concepts of basic sciences and with emphasis on their practical utility in civil engineering.

CO2: Model physical and mechanical properties of rocks and rock mass through quantification

CO3: Justify importance of residual stresses in rock mass and to model the redistribution of stresses during

CO4: Identify subsurface information and groundwater potential sites through geophysical investigation

CO5: Apply geological principles for mitigation of natural hazards and select sites for dams and tunnels

TEXT BOOKS:

1)Engineering Geology by N.Chennakesavulu, Mc-Millan, India Ltd. 2005
2)Engineering Geology by Subinoy Gangopadhyay, Oxford university press.
3)Engineering Geology by Parbin Singh, S.K.Kataria & Sons.
4) Principles of Engineering Geology by K.V.G.K. Gokhale – B.S publications

REFERENCES:

1. F.G. Bell, Fundamental of Engineering Geology Butterworths, Publications, New Delhi, 1992.
2. Krynine & Judd, Principles of Engineering Geology & Geotechnics, CBS Publishers & Distribution
3) Engineering Geology for Civil Engineers – P.C. Varghese PHI

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18ME52) BASIC MECHANICAL ENGINEERING

B. Tech–IV Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT – I

Engineering materials and joining processes:

Engineering Materials: Types and applications of Ferrous & Nonferrous metals and alloys.

Composites: Introduction: Definition, Classification and applications (Automobiles)

Soldering, Brazing and Welding:

Definitions, classification and method of soldering, Brazing and welding. Differences between soldering, brazing and Welding. Description of Electric Arc Welding and Oxy-Acetylene Welding.

UNIT – II

Machine Tools Operations :

Turning, facing, knurling, Thread cutting, Taper Turning by swiveling the compound rest, Drilling, Boring, Reaming, Tapping, Counter Sinking, Counter Boring, -Plane milling, End milling, Slot milling.

UNIT – III

Internal Combustion Engines :

Classification, I.C. Engines parts, 2 Stroke and 4 stroke Petrol engines, 4 stroke diesel engines. P-V diagrams of Otto and Diesel cycles. Problems on indicated power, brake power, indicated thermal efficiency, brake thermal efficiency, mechanical efficiency, and specific fuel consumption, [numericals on IC Engines].

UNIT – IV

Turbines :

Classification, Principle of operation of Impulse and reaction turbines, Delavan's turbine, Parson's turbine. (No compounding of turbines).

Gas turbines: Classification, Working principles and Operations of Open cycle and closed cycle gas turbines.

Water turbines: Classification, Principles and operations of Pelton wheel, Francis turbine and Kaplan turbine.

UNIT – V

Energy Resources: Non-renewable and renewable energy resources, Petroleum based solid, liquid and gaseous fuels, Calorific values of fuels.

Solar Power: Solar Radiation, Solar constant (definition only), Solar Thermal energy harvesting **Wind Power:** principle of operation of a typical windmill.

Hydro Power: Principles of electric power generation from hydropower plants.

Nuclear Power: Principles of Nuclear power plants.

COURSE OUTCOMES:

After the completion of this course, the students should be able to

CO1: Identify the Various Energy sources and IC engines systems.
CO2: Apply the Metal removal process using Lathe, drilling and Milling operations.
CO3: Compare the application and usage of various engineering Materials.
CO4: Analyze the Principle of operation of Impulse and reaction turbine.
CO5: Discuss the importance of engineering materials.

TEXT BOOKS

1. V.K.Manglik, "Elements of Mechanical Engineering", PHI Publications, 2013. (Module-1,2,4,5)
2.. K.R.Gopalkrishna, "A text Book of Elements of Mechanical Engineering"- Subhash Publishers, Bangalore. (Module -1,2,3,4,5).

REFERENCE BOOKS

1. S.TrymbakaMurthy, "A Text Book of Elements of Mechanical Engineering", 4th Edition 2006, Universities Press (India) Pvt Ltd, Hyderabad.
2. K.P.Roy, S.K.HajraChoudhury, Nirjhar Roy, "Elements of Mechanical Engineering", Media Promoters & Publishers Pvt Ltd,Mumbai,7th Edition,2012
3. Pravin Kumar, "Basic Mechanical Engineering", 2013 Edition, Pearson.

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE12) FLUID MECHANICS & HYDRAULIC MACHINERY LAB

B. Tech– IV Sem.

L	T	P	C
0	0	2	1

Pre Requisites: FM & HHM Theory

LIST OF EXPERIMENTS:

1. Calibration of Venturimeter & Orifice meter
2. Determination of Coefficient of discharge for a small orifice / mouthpiece by constant head method.
3. Calibration of contracted Rectangular Notch and / Triangular Notch
4. Determination of friction factor of a pipe.
5. Determination of Coefficient for minor losses.
6. Verification of Bernoulli's equation.
7. Impact of jet on vanes
8. Study of Hydraulic jump.
9. Performance test on Pelton wheel turbine
10. Performance test on Francis turbine.
11. Performance characteristics of a single stage/ multi-stage centrifugal pump.
12. Performance characteristics of a reciprocating pump.

COURSE OUTCOMES:

After the completion of this course, the students should be able to

CO1: Calibrate flow measuring devices used in pipes, channels and tank

CO2: Demonstrate practical understanding of the minor and friction losses in pipe flows and characterize laminar and turbulent flows

CO3: Demonstrate a practical working of Hydraulic machines- different types of Turbines, Pumps, and other miscellaneous hydraulics machines.

CO4: Compare the results of analytical models introduced in a lecture to the actual behavior of real fluid flows and draw correct and sustainable conclusions.

****

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE13) ENGINEERING GEOLOGY LAB

B. Tech– IV Sem.

L	T	P	C
0	0	2	1

Pre Requisites: Engineering Geology Theory

LIST OF EXPERIMENTS:

1.Study of physical properties and identification of minerals referred under the theory.
2.Megascopic description and identification of rocks referred under the theory.
3.Microscopic study of rocks.
4.Interpretation and drawing of sections of geological maps showing tilted beds, faults, uniformities etc.
5.Simple Structural Geology problems.

LAB EXAMINATION PATTERN:

1.Description and identification of SIX minerals
2.Description and identification of Six (including igneous, sedimentary and metamorphic rocks)
3.Interpretation of a Geological map along with a geological section.
4.Simple strike and Dip problems.
5.Microscopic identification of rocks.

COURSE OUTCOMES:

After the completion of this course, the students should be able to

CO1: Learn about the ground surface features based on map patterns of contour within the framework of fundamental concepts of basic sciences with emphasis on practical application in civil engineering

CO2: Identify physical and mechanical properties of rocks and minerals and its application in civil engineering uses.

CO3: Measure strike and dip of the bedding planes

CO4: Interpret and draw the sections for geological maps showing horizontal beds, vertical beds, inclined beds, folds, faults.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE14) BUILDING DRAWING LAB - CAD

B. Tech– IV Sem.

L	T	P	C
0	1	2	2

Pre Requisites: Nil

LIST OF EXPERIMENTS:

1. Introduction to computer aided drafting
2. Software for CAD – Introduction to different softwares
3. Practice exercises on CAD software
4. Drawing of plans of buildings using the software
5. a) Single storied buildings b) multi storied buildings
6. Developing sections and elevations for
   a) Single storied buildings b) multi storied buildings
7. Detailing of building components like Doors, Windows, Roof Trusses etc. using CAD softwares
8. Exercises inthe development of working on buildings

COURSE OUTCOME:

After the completion of this course, the students should be able to

CO1: Use the usage of AutoCAD commands
CO2: Draw the plan and elevation of the building structures.
CO3: Draw the 2D & 3D building elements
CO4: Detail the building components in Auto CAD drawings.

Text Books:

1. Computer Aided Design Laboratory by M. N. Sesha Praksh & Dr. G. S. Servesh –Laxmi Publications.
2. Engineering Graphics by P. J. Sha – S. Chand & Co.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18MC07) GENDER SENSITIZATION

B. Tech– IV Sem.

L	T	P	C
2	0	0	0

Pre-Requisites: None

Course Objectives:

- To develop students sensibility with regard to issue of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

SYLLABUS CONTENT:

Unit – 1

A. Gender: Why Should We Study It?

B. Socialization: Making Women, Making Men

i. Introduction
ii. Preparing for womanhood
iii. Growing up male
iv. First lessons in caste
v. Different masculinities

Unit – 2

A. Housework: The Invisible Labour

i. "My mother does not work"
ii. "Share the load"

B. Missing Women: Sex Selection and Its consequences

i. Declining sex ratio
ii. Demographic consequences

Unit – 3

A. Knowledge: Through the Lens of Gender

i. Point of view
ii. Gender and the structure of knowledge
iii. Further reading: Unacknowledged women artists of Telangana.

B. Sexual Harassment: Say No!

i. Sexual harassment, not eve-teasing
ii. Coping with everyday harassment
iii. Further reading: "Chupulu"

C. Women' Work: Its Politics and Economics

i. Fact and fiction
ii. Unrecognized and unaccounted work

iii. Further reading: Wages and conditions of work

Unit – 4

A. Domestic Violence: Speaking Out

i. Is home a safe place?
ii. When women unite [Film]
iii. Rebuilding lives
iv. Further reading: New forums for justice

B. Whose History? Questions for Historians and Others

i. Reclaiming a past
ii. Writing other histories
iii. Further reading: Missing pages from modern Telangana history

C. Gender Spectrum: Beyond the Binary

i. Two or many?
ii. Struggles with discrimination

Unit – 5

A. Thinking about Sexual Violence

i. Blaming the victim
ii. "I fought for my life…"
iii. Further reading: The caste face of violence

B. Just Relationships: Being Together as Equals

i. Mary Kom and Onler
ii. Love and acid just do not mix
iii. Love letters
iv. Mothers and fathers
v. Further Reading: Rosa Parks – The Braveheart

C. Additional Reading: Our Bodies, Our Health

Course Outcomes:

After the completion of this course, the students should be able to

CO 1: Define the need and importance of women empowerment.
CO 2: Extend the levels of understanding and classification of gender disparities.
CO 3: Identify the need of equal distribution of work in the entire sector irrespective of gender.
CO 4: Construct the emergency needs of saving girl child.
CO 5: Improves thinking levels to find solution to the missing women and bring realization in the society.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE15) DESIGN OF STEEL STRUCTURES

B. Tech–V Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Strength of Materials - II

SYLLABUS CONTENT:

UNIT – I

Materials-types of structural steel-mechanical properties of steel-Concepts of plasticity-yield strength. Loads-and combinations local buckling behavior of steel. Concept of limit State Design-Limit States-Design Strengths-deflection limits-serviceability-stability check. Bolted connections-IS-800-2007- specifications-Design strength-efficiency of joint-prying action. Welded connections-Types of welded joints-specifications-design requirements.

UNIT – II

Design of tension members- Design strength- Design procedure splice - lug angle.
Design of compression members-Buckling class- slenderness ratio / strength design-laced – battened columns- splice- column base- slab base.

UNIT – III

Design of Beams-Plastic moment- Bending and shear strength/ buckling – Built-up sections – laterally / supported beams - Design of eccentric connections – Framed – stiffened / seat connection.

UNIT – IV

Design of plate girders – elements – economical depth – design of main section – connections between web and flange – design of end bearing – intermediate stiffeners – Design of Web splice & Flange splice.

UNIT – V

Design of roof trusses – Types of roof trusses, loads on trusses – purlin design – truss design, Design of joints and end bearings.

Course Outcomes:

After completion of this course, students should be able to

CO1: Explain and Design the connections.
CO2: Analyse and Design the tension, compression members
CO3: Design the beams on plastic moment and the eccentric connections
CO4: Design the plate girder and various stiffeners.
CO5: Analyse and Design the components of roof trusses.

Textbooks :

1.Design of steel structures – N. Subramanian, Oxford University Press – 2009.
2.Limit State Design of steel structures, S.K. Duggal, Tata McGraw-Hill, 2010
3.Relevant IS codes.

Reference books:

1.Design of Steel structures by K.S. Sai Ram, Person Education.
2.Design of Steel Structures Edwin H. Gaylord, Jr. Charles N. Gaylord and James Stallmeyer Tata McGraw-Hill Education pvt. Ltd.
3.Design of Steel Structures Vol. 1 & 2 – Ramchandra, Standard Publications.
4.Design of steel structures, Structures, S.S. Bhavikatti, IK int Publication House, New Delhi, 2010.
5.Structural Design and Drawing by N.Krishna Raju, Universities Press

****

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE16) GEOTECHNICAL ENGINEERING

B. Tech–V Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Strength of Materials-I

SYLLABUS CONTENT:

UNIT – I

INTRODUCTION: Soil formation and structure – moisture content – Mass- volume relationship – Relative density.

INDEX PROPERTIES OF SOILS: Grain size analysis – Sieve– consistency limits and indices – I.S. Classification of soils.

UNIT –II

PERMEABILITY: Soil water – capillary rise – flow of water through soils – Darcy's law-permeability – Factors affecting permeability – laboratory determination of coefficient of permeability –Permeability of layered soils – In-situ permeability tests (Pumping in & Pumping out test).

EFFECTIVE STRESS & SEEPAGE THROUGH SOILS: Total, neutral and effective stress – principle of effective stress - quick sand condition – Seepage through soils – Flownets: Characteristics and Uses.

UNIT –III

STRESS DISTRIBUTION IN SOILS: Boussinesq's and Westergaard's theories for point load, uniformly loaded circular and rectangular areas, pressure bulb, variation of vertical stress under a point load along the vertical and horizontal plane, and Newmark's influence charts for irregular areas.

COMPACTION: Mechanism of compaction – factors affecting compaction – effects of compaction on soil properties – Field compaction Equipment – compaction quality control.

UNIT – IV

CONSOLIDATION: Types of compressibility – Immediate Settlement, primary consolidation and secondary consolidation - stress history of clay; e-p and e-log(p) curves – normally consolidated soil, over consolidated soil and under consolidated soil – pre-consolidation pressure and its determination - Terzaghi's 1-D consolidation theory – coefficient of consolidation: square root time and logarithm of time fitting methods - computation of total settlement and time rate of settlement.

UNIT - V

SHEAR STRENGTH OF SOILS: Importance of shear strength – Mohr's– Coulomb Failure theories – Types of laboratory tests for strength parameters – strength tests based on drainage conditions – strength envelops – Shear strength of sands - dilatancy – critical void ratio.

Course Outcomes

After completion of this course, students should be able to

CO1: Identify the problems in founding strata and suggest economically feasible solutions through systematic analysis.

CO2: Analyse the water flow and providing solutions to counter the hydraulic pressures.

CO3: Awareness of the classical concepts of soil mechanics and its necessity

CO4: Ability to analyze the consolidation settlements

CO5: Understand the principles of compaction to improve the soil stratum

Textbooks:

1 Gopal Ranjan & ASR Rao, "Basic and Applied Soil Mechanics", New age International Pvt . Ltd, New Delhi
2. K.R. Arora, "Soil Mechanics and Foundation Engg." Standard Publishers and Distributors, Delhi.
3. B.C.Punmia, Ashok Kumar Jain and Arun Kumar Jain, "Soil Mechanics and Foundation", Laxmi, publications Pvt. Ltd., New Delhi

References:

1. VNS Murthy, "Soil Mechanics and Foundation Engineering, CBS Publishers
2. Braja M.Das, "Principals of Geotechnical Engineering", Cengage Learning Publishers.
3. C. Venkataramiah, "Geotechnical Engineering", New age International Pvt . Ltd, (2002).
4. Cuduto, "Geotechnical Engineering Principles and Practices", PHI Intrernational.
5. Manoj Dutta & Gulati S.K, "Geotechnical Engineering", Tata Mc.Grawhill Publishers New Delhi.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE17) CONCRETE TECHNOLOGY

B. Tech–V Sem.

L	T	P	C
3	0	0	3

Pre Requisites:Building Materials and Constrution Planning

SYLLABUS CONTENT:

UNIT I

CEMENT: Portland Cement–Chemical Composition–Hydration, Setting of Cement–Structure of hydrated cement – Test on physical properties – Different grades of cement. Admixtures: Types of admixtures – mineral and chemical admixtures – relevant IS codal provisions.

UNIT - II

AGGREGATES: Classification of aggregate–Particle shape & texture–Bond, strength &other mechanical properties of aggregate – Specific gravity, Bulk density, porosity, adsorption & moisture content of aggregate – Bulking of sand – Deleterious substance in aggregate – Soundness of aggregate – Alkali aggregate reaction – Thermal properties – Sieve analysis – Fineness modulus – Grading curves – Grading of fine, manufactured sand & coarse Aggregates – relevant IS codal provisions..

UNIT – III

MIX DESIGN: Principles of mix proportions – properties of materials required for mix design - Factors affecting mix proportions–BIS method of mix design -Quality Control of concrete–Statistical methods – Acceptance criteria – relevant IS codal provisions.

FRESH CONCRETE: Workability–Factors affecting workability–Measurement of workability – Effect of time and temperature on workability – Segregation & bleeding – Mixing and vibration of concrete – Steps in manufacture of concrete – Quality of mixing water –- relevant IS codal provisions..

UNIT - IV

HARDENED CONCRETE: Water / Cement ratio– Abram‟s Law –Gelspace ratio–Maturity concept. Gain strength of concrete -Compression test–split tensile strength – Factors affecting strength – Flexure tests – Pull-out test, Non-destructive testing methods – relevant IS codal provisions. Modulus of elasticity–Dynamic modulus ofelasticity – Posisson‟s ratio – Creep of concrete – Factors influencing creep – Shrinkage – Types of shrinkage.

Durability of concrete –factors affecting –permeability –Alkalie Aggregate Reaction - chloride attack - sulphate attack - . relevant IS codal provisions.

UNIT – V

SPECIAL CONCRETES: Introduction to Light weight concrete–Cellular concrete–No-fines concrete – High strength concrete – Fibre reinforced concrete – Polymer concrete – Geopolymer concrete - High performance concrete – Self compacting concrete–ferro cement concrete – SIFCON concrete -relevant IS codal provisions.

Course Outcomes:

After completion of this course, students should be able to

CO1: Gain knowledge of cement materials and types of admixtures.
CO2: Learn about types of aggregates, properties and its test.
CO3: Design the mix proportion of concrete and learn fresh properties of concrete.
CO4: Gain knowledge of hardened and durability properties of concrete.
CO5: Obtain knowledge of special concretes and its application.

Textbooks:

1.A.M.Neville, "Properties of Concrete"– Low priced Edition – 4th edition
2.M.S.Shetty, "Concrete Technology", S.Chand & Co. ; 2004
3.Relevant IS codes

References:

1.M.L. Gambhir, "Concrete Technology", Tata Mc. Graw Hill Publishers, New Delhi
2.A.R. Santha Kumar, "Concrete Technology", Oxford university Press, New Delhi
3.P.K.Mehta and J.M.Monteiro, "Concrete: Microstructure, Properties and Materials", Mc-Graw Hill Publisher

****

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE18) ENGINEERING HYDROLOGY

B. Tech–V Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Fluid Mechanics

SYLLABUS CONTENT:

UNIT I

Introduction to engineering hydrology and its applications, Hydrologic cycle, types and forms of precipitation, rainfall measurement, types of rain gauges, computation of average rainfall over a basin, processing of rainfall data - Adjustment of record - Rainfall Double Mass Curve. Runoff- Factors affecting Runoff – Runoff over a Catchment- Empirical and Rational Formulae.

Abstraction from rainfall-evaporation, factors affecting evaporation, measurement of evaporation- Evapotranspiration- Penman and Blaney & Criddle Methods -Infiltration, factors affecting infiltration, measurement of infiltration, infiltration indices..

UNIT-II

Stream flow measurement- Introduction – Measurement of stage – Measurement of velocity – Area velocity method – Electromagnetic method – Ultrasonic method – Indirect methods – Hydrometry stations.

UNIT-III

Distribution of Runoff – Hydrograph Analysis Flood Hydrograph – Effective Rainfall – Base Flow- Base Flow Separation - Direct Runoff Hydrograph Unit pulse and Unit step function - Unit Hydrograph, definition, limitations and applications of Unit hydrograph, derivation of Unit Hydrograph from Direct Runoff Hydrograph and vice versa - S-hydrograph, Synthetic Unit Hydrograph.

UNIT-IV

Floods – Introduction – Rational method – Unit hydrograph method – Flood frequency studies – Design flood – Risk, Reliability and safety factor.

Flood Routing- Introduction – Basic equations – Hydrologic storage routing – Hydraulic method of flood routing – Nash's conceptual model – Flood forecasting.

UNIT-V

Ground water Occurrence, types of aquifers, aquifer parameters, porosity, specific yield, permeability, transmissivity and storage coefficient, Darcy's law, radial flow to wells in confined and unconfined aquifers. Types of wells,- Well Construction – Well Development.

COURSE OUTCOMES:

After the completion of the course, the student should be able to

CO1: Determine the quantity of precipitation available for a given catchment area
CO2: Apply different methods to formulate the velocity of stream flow
CO3: Discuss the importance of estimation of runoff, analysis of rainfall data and various hydrographs such as unit hydrograph, flood hydrograph and synthetic unit hydrograph
CO4: Make use of Techniques of the Hydrograph to forecast Flood discharge at various duration
CO5: Build the necessary theoretical background of ground water hydrology, types of aquifers and their yields.

TEXT BOOKS:

1. K. Subramanya, "Engineering Hydrology", Tata McGraw-Hill Education
2. Jayaram Reddy, "Engineering Hydrology", Laxmi publications pvt. Ltd., New Delhi

REFERENCES:

1. C.S.P. Ojha, P. Bhunya and R. Berndtsson, "Engineering Hydrology", Oxford Higher Education.
2. P.N.Modi, "Irrigation and Water Resources & Water Power", Standard Book House.
3. D.K. Majundar, "Irrigation Water Management", Printice Hall of India.
4. V.P.Singh, "Elementary hydrology", PHI publications.
5. Ven Te Chow, David R. Maidment larry W. Mays, "Applied hydrology", Tata MC. Graw Hill.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE33) STRUCTURAL ANALYSIS-II

B. Tech–V Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Structural Analysis-I

SYLLABUS CONTENT:

UNIT – I

SLOPE DEFLECTION METHOD: Determination of static and kinematic indeterminaciesfor frames. Analysis of Single Bay single storey Portal Frames Including Side Sway and settlement of supports - Shear force and bending moment diagrams.

UNIT – II

MOMENT DISTRIBUTION METHOD - Analysis of Single Bay Single Storey PortalFrames including side Sway and settlement of supports – shear force and bending moments.

UNIT – III

KANI"s METHOD: Analysis of continuous beams including settlement of supports.Analysis of single bay single storey and single bay two Storey Frames by Kani"s Method including Side Sway. Shear force and bending moment diagrams.

APPROXIMATE METHODS OF ANALYSIS: Introduction–Analysis of multi-storeyframes for lateral loads: Portal Method, Cantilever method and Factor method. Analysis of multi-storey frames for gravity (vertical) loads. Substitute Frame method.

UNIT – IV

MATRIX METHODS OF ANALYSIS: Introduction to Flexibility and Stiffness matrixmethods of analyses using „system approach" upto three degrees of indeterminacy– Analysis of continuous beams including settlement of supports using flexibility and stiffness methods. Analysis of pin-jointed determinate plane frames using flexibility and stiffness methods-Analysis of single bay single storey portal frames including side sway using only stiffness method. Shear force and bending moment diagrams.

UNIT- V

MOVING LOADS and INFLUENCE LINES: Introduction maximum SF and BM at agiven section and absolute maximum S.F. and B.M due to single concentrated load U.D load longer than the span, U.D load shorter than the span, two point loads with a fixed distance between them and several point loads-Equivalent uniformly distributed load-Focal length. Definition of influence line for SF, Influence line for BM-load position for maximum SF at a section-Load position for maximum BM at a section - Point loads, UDL longer than the span, UDL shorter than the span- Influence lines for forces in members of Pratt and Warren trusses. Equivalent uniformly distributed load. Focal length.

Course outcomes:

After completion of this course, students should be able to

CO1: Analysis the portal frames by slope deflection method and learn to draw the shear force and bending moments diagram for frames.
CO2: Apply the method of approach to analysis of portal frame by moment distribution method
CO3: Able to analysis beams and frames by Kani's method and Approximation method.
CO4: Analyze the continuous beam, Pin jointed plane frame using the flexibility of stiffness method.
CO5: Gain knowledge to calculate the Shear force and bending moment on the influence line.

Text Books:

1.C.S.Reddy, "Basic Structural Analysis", Tata McGraw Hill Publishers.
2.V.N.Vazirani and M.M.Ratwani, "Structural Analysis, Vol –I & II",Khanna Publishers, 2015.
3.G.S.Pandit and S.P.Gupta, "Structural Analysis, Vol I & II", Tata McGraw Hill Education Pvt. Ltd., 2008.
4.Bhavikatti, S.S,Structural Analysis,Vol.1,& 2, Vikas Publishing House Pvt.Ltd.,NewDelhi-4, 2014.
5.Bhavikatti, S.S, Matrix Method of Structural Analysis, I. K. International Publishing House Pvt.Ltd.,New Delhi-4, 2014.

References:

1.H.J.Shah and S.B.Junnarkar, "Mechanics of Structures Vol –II", Charotar Publishing House Pvt. Ltd.
2.Vazarani and Ratwani, "Structural Analysis Vol –I &II", Khanna Publishers.
3.S.S.Bhavikatti, "Structural Analysis –II", Vikas Publishing House Pvt. Ltd.
4.Devdas Menon, "Structural Analysis", Narosa Publishing House.
5.A.K.Jain, "Advanced Structural Analysis", Nem Chand & Bros.
6.R.Vaidyanathan and P.Perumal, "Structural Analysis Vol I & II", Lakshmi Publications House Pvt. Ltd.
7.William M.C.McKenzie, "Examples in structural Analysis", Taylor & Francis.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE34) REMOTE SENSING

B. Tech–V Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT-I

Physics of Remote Sensing: Sources of Energy, Active and Passive Radiation, Electromagnetic Radiation - Reflectance, Transmission, Absorption, Thermal Emissions, Interaction with Atmosphere, Atmospheric windows, Spectral reflectance of Earth's surface features, Multi concept of Remote Sensing.

UNIT-II

Platforms: Various types of platforms, different types of aircraft, manned and unmanned spacecrafts used for data acquisition - characteristics of different types of platforms - airborne and spaceborne. Data Acquisition Systems: Optical, Thermal and Microwave; Resolutions - spatial, spectral, radiometric and temporal, signal to noise ratio.

UNIT-III

Image Processing: Data Products and Their Characteristics, Digital image formation, digital image display mechanism, image histograms, look up table data, Pre-processing – Atmospheric, Radiometric, Geometric Corrections - Basic Principles of Visual Interpretation, Equipment for Visual Interpretation, Ground Truth, Ground Truth Equipment.

UNIT-IV

Image enhancements: Linear and non-linear Contrast enhancement techniques, density slicing, pseudo colour images, spatial enhancement techniques (convolution filtering), spectral enhancement techniques, Image algebra.

UNIT-V

Applications of Remote sensing in various Engineering and Science domains such as Agriculture, Forest, Soil, Geology, LU/LC, Water Resources, Urban etc.

Course Outcomes:

After completion of this course, student should be able to

CO1: Understand the terminology,concept of remote sensing,types of radiation.

CO2: Understand different characteristics of platforms,types of data acquisition systems.

CO3: Able to understand the image formations, analyse the corrections.

CO4: Apply the linear and non-linera techniques in image enhacements

CO5: Apply the remote sensing in engineering and science streams.

TEXT BOOKS:

1. James B. Campbell & Randolph H. Wynne. Introduction to Remote Sensing, The Guilford Press, 2011.
2. Lillesand T.M & Kiefer R.W., Remote Sensing and Image Interpretation, John Wiley and Sons, 2008.

REFERENCES:

1. Charles Elach & Jakob van Zyl., Introduction to the physics and techniques of Remote Sensing, John Wiley & Sons publications, 2006.
2. Christian Matzler., Thermal microwave radiation: Applications for remote sensing, The institution of Engineering and Technology, London, 2006.
3. Rees, W. G., Physical Principles of Remote Sensing, Cambridge University Press, 2001Paul Curran P.J., Principles of Remote Sensing, ELBS Publications, 1985.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE35) ENVIRONMENTAL IMPACT ASSESSMENT

B. Tech–V Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT – I

Basic concept of EIA : Initial environmental Examination, Elements of EIA, - factors affecting E-I-A Impact evaluation and analysis, preparation of Environmental Base maps, Classification of environmental parameters.

E I A Methodologies: introduction, Criteria for the selection of EIA Methodology, E, I A methods, Ad-hoc methods, matrix methods, Network method Environmental Media Quality Index method, overlay methods, cost/benefit Analysis.

UNIT-II

Assessment of Impact of development Activities on Vegetation and wildlife, environmental Impact of Deforestation – Causes and effects of deforestation.

UNIT-III

Procurement of relevant soil quality, Impact prediction, Assessment of Impact significance, Identification and Incorporation of mitigation measures.

UNIT – IV

Environmental Audit & Environmental legislation objectives of Environmental Audit, Types of environmental Audit, Audit protocel, stages of Environmental Audit, onsite activities, evaluation of Audit data and preparation of Audit report, Post Audit activities.

UNIT - V

The Environmental Protection Act, The water Act, The Air (Prevention & Control of pollution Act.), Motor Act, Wildlife Act. Case studies and preparation of Environmental Impact assessment statement for various Industries.

COURSE OUTCOMES:

After completion of this course, students should be able to

CO1: Acquire the knowledge of Environmental impacts, control and regulations

CO2: Understand environmental clearances and guidelines

CO3: Understands environment laws and regulations

CO4: Acquire Knowledge to prepare an audit report

CO5: Prepare EIA reports and environmental management plans

TEXT BOOKS:

1.Y. Anjaneyulu, Valli Manickam, "Environmental Impact Assessment Methodologies", CRC Press, 2011.
2.Larry Canter, "Environmental Impact Assessment", McGraw-Hill Publications
3.Barthwal, R. R. B., "Environmental Impact Assessment", New Age International Publications

REFERENCES:

1.Glynn, J. and Gary, W. H. K., "Environmental Science and Engineering", Prentice HallPublishers
2.Suresh K. Dhaneja, "Environmental Science and Engineering", S.K.,Katania & Sons Publication., New Delhi.
3.Bhatia, H. S., "Environmental Pollution and Control", Galgotia Publication(P) Ltd, Delhi.
4.Wathern, P., "Environmental Impact Assessment: Theory & Practice", Publishers-Routledge, London, 1992.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18MB01) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

B. Tech–V Sem.

L	T	P	C
3	0	0	3

Pre Requisites :None

SYLLABUS CONTENT:

Unit I Introduction & Demand Analysis.

Definition, Nature and Scope of Managerial Economics. Demand Analysis: Demand Determinants, Law of Demand and its exceptions. Elasticity of Demand: Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting.

Unit IIProduction & Cost Analysis: Production Function-

lsoquants and lsocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale. Cost Analysis: Cost concepts. Break-even Analysis (BEA)-Determination of Break-Even Point (simple problems) - Managerial Significance.

Unit IIIMarkets & New Economic Environment:

Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition. Price-Output Determination in case of Perfect Competition and Monopoly. Pricing Objectives and Policies of Pricing. Methods of Pricing. Eusrness; Features and evaluation of different forms of Business Organisation: Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, New Economic Environment Changing Business Environment in Post-liberalization scenario.

Unit IVCapital Budgeting:

Capital and its significance, Types of Capitat, Estimation of Fixed and Working capital requirements, Methods and sources of raising capital - Trading Forecast, Capital Budget, Cash Budget. Capital Budgeting: features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simple problems).

Unit VIntroduction to Financial Accounting & Financial Analysis:

Accounting concepts and conventions - lntroduction IFRS - Double-Entry Book Keeping, Journal, Ledger, Trial Balance- Final Accounts (Trading Account, Profit and Loss Account and Balance sheet with simple adjustments).

Financial, Analysis: Analysis and lnterpretation of Liquidity Ratios, Activity Ratios, and Capital structure Ratios and Profitability ratios. Du Pont Chart'

Course Outcomes:

CO1: Understand the nature, scope and importance of Managerial Economics.

CO2: Know what is demand, analyze demand and how elasticity of demand is used for pricing decisions and to evaluate methods for forecasting demand.

CO3: Know how production function is carried out to achieve least cost combination of Inputs and how to analyze cost.

CO4: Understand the characteristics of different kinds of markets and outline different form of business organization and analyze how capital budgeting techniques are used for investment decisions.

CO5: Know how to prepare final accounts and how to interpret them, analyze and interpret financial statements using ratio analysis.

References:

1. Varshney & Maheswari: Managerial Economics, Sultan Chand' 2009.
2. S.A. Siddiqui & A.S. Siddiqui, Managerial Economics and Financial Analysis, New Age international Publishers, Hyderabad 2013'
3. M' Kasi Reddy & Saraswathi, Managerial Economics and Financial Analysis, PHI New Delhi, 2012.
4. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi. 2012

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE19) CONCRETE TECHNOLOGY LAB

B. Tech–V Sem.

L	T	P	C
0	0	2	1

Pre Requisites: Concrete Technology Theory

I. Test on Cement
1. Normal Consistency and fineness of cement
2. Initial setting time and final setting time of cement
3. Specific gravity of cement
4. Soundness of cement
5. Compressive strength of cement

II. Test on Aggregate
1. Sieve Analysis of Aggregate
2. Specific gravity of Aggregate
3. Bulking of sand

III. Test on Fresh Concrete
1. Slump cone test
2. Compaction factor Test
3. Vee - Bee Test
4. Flow Table Test

IV. Test on hardened concrete
1. Compression test on Cubes & Cylinders
2. Split Tensile Test
3. Flexure Test
4. Modulus of Elasticity

V. Non Destructive testing of concrete
1. Rebound Hammer Test
2. Ultrasound Pulse Velocity Test (UPV Test)

Course Outcomes:
After completion of this course, students should be able to

CO1: Understand about the test on cement and aggregate
CO2: Evaluate the workability of fresh the Concrete
CO3: Determine the strength characteristics of harden concrete
CO4: Gain knowledge of non-destructive test on concrete

****

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE20) GEO TECHNICAL ENGINEERING LAB

B. Tech–V Sem.

L	T	P	C
0	0	2	1

Pre Requisites: Geotechnical Engineering Theory

LIST OF EXPERIMENTS

1.Atterberg Limits (Liquid Limit, Plastic Limit and Shrinkage Limit)
2.Field density (Both sand replacement and core cutter methods)
3. Determination of Specific gravity of soil and Free swell index
4.Grain size distribution by sieve analysis
5.Permeability of soil by constant and variable head test methods
6.Standard Proctor's Compaction Test
7.California Bearing Ratio Test (CBR Test)
8.Determination of Coefficient of consolidation
9.Unconfined compression test,
10.Direct shear test
11.Vane shear test
12.Tri-axial compression test (Laboratory UU test)

Course Outcomes:

After completion of this course, students should be able to

CO1: Classify soils and appropriately designate them
CO2: Calculate the permeability value of soil
CO3: Determine engineering properties of soil and suggest suitable field improvements.
CO4: Determine the shear strength properties of soil

****

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18MC04) INDIAN CONSTITUTION

B. Tech– V Sem. L T P C

2 0 0 0

Pre Requisites: Nil

SYLLABUS CONTENT

UNIT I -Introduction and Basic Information about Indian Constitution

The Necessity of the Constitution, The Societies before and after the Constitution adoption.

Introduction to the Indian constitution, The making of the Constitution, The Role of the Constituent Assembly - Preamble and Salient features of the Constitution of India. Fundamental Rights and its Restriction and limitations in different Complex Situations. Directive Principles of State Policy (DPSP) & it's present relevance in our society with examples. Fundamental Duties and its Scope and significance in Nation building.

UNIT II - Union Excutive and State Excutive

Parliamentary System, Federal System, Centre-State Relations.

Union Executive – President, Prime Minister, Union Cabinet, Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Supreme Court of India, Judicial Reviews and Judicial Activism.

State Executives – Governor , Chief Minister, State Cabinet, State Legislature, High Court and Subordinate Courts, Special Provisions (Article 370.371,371J) for some States.

UNIT III –Elections and Emergency Provisions

Elections, Electoral Process, and Election Commission of India, Election Laws. Emergency Provisions, types of Emergencies and it's consequences.

UNIT IV - Amendments

Amendments - Methods in Constitutional Amendments (How and Why) and Important Constitutional Amendments. Amendments – 7,9,10,12,42,44, 61, 73,74, ,75, 86, and 91,94,95,100,101,118 and some important Case Studies. Recent Amendments with explanation. Important Judgements with Explanation and its impact on society (from the list of Supreme Court Judgements).

UNIT V- Constitutional Provisions/ Local Administration/ Human Rights

Special Constitutional Provisions for SC & ST, OBC, Special Provision for Women, Children & Backward Classes.

Local Administration : Powers and functions of Municipalities and Panchyats System. Co – Operative Societies and Constitutional and Non-constitutional Bodies.

Human Rights/values – Meaning and Definitions, Legislative Specific Themes in Human Rights and Functions/ Roles of National Human Rights Commission of India. Human Rights (Amendment Act)2006.

COURSE OUTCOMES:

On completion of this course, students will be able to,

CO1: Have general knowledge and legal literacy about Indian Constitution and there by it helps to take up competitive examinations & to manage/face complex societal issues in society.

CO2: Understand state and central policies(Union and State Excutive), fundamental Rights & their duties.

CO3: Understand Electoral Process and special provisions in Constitution.

CO4: Understand the Amendments in Indian Constitution

CO5: Understand powers and functions of Municipalities, Panchayats and Co-operative Societies, with Human Rights and NHRC.

Text Books

1) Durga Das Basu (DD Basu): "Introduction to the Constitution on India", (Students Edition.) Prentice –Hall EEE, 19th / 20th Edn., (Latest Edition) or 2008.

2) Shubham Singles, Charles E. Haries, and Et al : "Constitution of India and Professional Ethics" by Cengage Learning India Private Limited, Latest Edition – 2018.

Reference Books

1) M.Govindarajan, S.Natarajan, V.S.Senthilkumar, "Engineering Ethics", Prentice –Hall of India Pvt. Ltd. New Delhi, 2004

2) M.V.Pylee, "An Introduction to Constitution of India", Vikas Publishing, 2002.

3) Latest Publications of NHRC - Indian Institute of Human Rights, New Delhi.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE21) DESIGN OF RC STRUCTURES

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Strength of Materials-I

SYLLABUS CONTENT:

UNIT –I INTRODUCTION
Introduction-Structure-Components of structure-Different types of structures-Safety and Stability – Loads – Different types of loads -Concepts of RCC Design – Working Stress Method - Limit State method – Load combinations as per Limit state method – Materials Characteristic values-Partial safety factors – Behaviour of steel and concrete – stress Bloack Parameters as per IS 456 -2000

Beams: Limit state analysis and design of sections in Flexure – Behaviour of RC section under flexure – rectangular, T and L-sections, singly reinforced and doubly reinforced beams –Detailing of reinforcement.

UNIT –II SHEAR AND TORSION
Limit state analysis and design of section for shear and torsion – concept of bond, anchorage and development length, I.S. code provisions. Design examples in simply supported and continuous beams, Detailing of reinforcement.

UNIT – III SLAB
Design of one way slab, two-way slab and continuous slab - Limit state design for serviceability for deflection, cracking and codal provision.

UNIT – IV COLUMNS
Short and Long columns – under axial loads, uniaxial bending and biaxial bending – I S Code provisions.

UNIT – V FOOTINGS AND STAIRCASE
Different types of footings–Design of isolated, square, rectangular, circular footings and combined footings. Design of dog-legged staircase.

Course Outcomes:
After completion of this course, students should be able to

CO1: Design the singly reinforced, doubly reinforced and flange sections.
CO2: Design the RC beams under flexure, shear and torsion
CO3: Design the one-way slab, two-way slab and staircase.
CO4: Design the axially loaded, uniaxial and biaxial bending columns.
CO5: Design the isolated square, rectangular and circular footings

Text Books:

1.N. Subramanian, "Design of Reinforced Concrete Structures", Oxford University Press.
2. P.C.Varghese, "Limit state designed of reinforced concrete", Prentice Hall of India, New Delhi.
3.S.Unnikrishna Pillai & Devdas Menon, "Reinforced concrete design", Tata Mc.Graw Hill, New Delhi.
4.N. Krishna Raju and R.N. Pranesh, "Reinforced concrete design", New age International Publishers, New Delhi
5.IS 456 – 2000
6.SP-16 - 1978

References:

1.M.L. Gambhir, "Fundamentals of Reinforced concrete design", Prentice Hall of India Private Ltd., New Delhi.
2.J.N.Bandhyopadhyay, "Design of concrete structures", PHI Learning Private Limited.
3.I.C.Syal and A.K.Goel, "Design of Reinforced Concrete Structures", S.Chand & company.
4.N.C. Sinha and S.K Roy, "Fundamentals of reinforced concrete", S. Chand publishers
5.P.C. Varghese, "Design of Reinforced Concrete Foundations", Prentice Hall of India, New Delhi.
6.B.C.Punmia, Ashok Kumar Jain and Arun Kumar Jain, "Reinforced concrete structures, Vol.1", Laxmi, publications Pvt. Ltd., New Delhi
7.Arthus H.Nilson, David Darwin, and Chorles W. Dolar, "Design of concrete structures", Tata Mc.Graw-Hill, 3rd Edition, 2005

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE22) IRRIGATION ENGINEERING

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites : FM&HM Theory

SYLLABUS CONTENT:

UNIT-I
Necessity and Importance of Irrigation, advantages and ill effects of Irrigation, types of Irrigation, methods of application of Irrigation water, Indian agricultural soils, methods of improving soil fertility –Crop Rotation, preparation of land for Irrigation, standards of quality for Irrigation water.

Soil-water-plant relationship, vertical distribution of soil moisture, soil moisture constants, soil moisture tension, consumptive use, Duty and delta, factors affecting duty- Design discharge for a water course. Depth and frequency of Irrigation, irrigation efficiencies-Water Logging.

UNIT-II
Classification of canals, Design of Irrigation canals by Kennedy's and Lacey's theories, balancing depth of cutting, IS standards for a canal design canal lining.

Design Discharge over a catchment, Computation of design discharge-rational formulae etc.

Storage Works-Reservoirs - Types of reservoirs, selection of site for reservoir, zones of storage of a reservoir, reservoir yield, estimation of capacity of reservoir using mass curve- Reservoir Sedimentation – Life of Reservoir.. Types of dams, factors affecting selection of type of dam, factors governing selection of site for a dam.

UNIT-III
Gravity dams: Forces acting on a gravity dam, causes of failure of a gravity dam, elementary profile and practical profile of a gravity dam, limiting height of a low gravity dam, Factors of Safety - Stability Analysis, Foundation for a Gravity Dam, drainage and inspection galleries.

Earth dams: types of Earth dams, causes of failure of earth dam, criteria for safe design of earth dam, seepage through earth dam-graphical method, measures for control of seepage.Spillways: types of spillways, Design principles of Ogee spillways - Spillway gates. Energy Dissipaters and Stilling Basins Significance of Jump Height Curve and Tail Water Rating Curve - USBR and Indian types of Stilling Basins.

UNIT-IV

Diversion Head works: Types of Diversion head works- weirs and barrages, layout of diversion head work - components. Causes and failure of Weirs and Barrages on permeable foundations,-Silt Ejectors and Silt Excluders

Weirs on Permeable Foundations – Creep Theories - Bligh's, Lane's and Khosla's theories, Determination of uplift pressure- Various Correction Factors – Design principles of weirs on permeable foundations using Creep theories - exit gradient, U/s and D/s Sheet Piles - Launching Apron.

UNIT-V

Canal Falls - types of falls and their location, Design principles of Notch Fall and Sarada type Fall.

Canal regulation works, principles of design of distributory and head regulators, Canal Cross Regulators -canal outlets, types of canal modules, proportionality, sensitivity and flexibility. Cross Drainage works: types, selection of site

COURSE OUTCOMES:

After the completion of the course, students should be able to

CO1: List out the concepts, techniques and modernization of Irrigation and Learn about irrigation water management on-farm development and command area development.

CO2: Distribution systems for canal irrigation and the basics of design of

CO3: Unlined and lined irrigation canal design

CO4: Analyze gravity and earth dams.

CO5: Plan and design diversion Headworks.

TEXT BOOKS:

1. Irrigation engineering and hydraulic structures by S.K Garg, Khanna publishers.
2. Irrigation and water power engineering by Punmia & Lal, Laxmi publications pvt. Ltd., New Delhi

REFERENCES:

1. Irrigation and water resources engineering by G.L. Asawa, New Age International Publishers
2. Theory and Design of Hydraulic structures by Varshney, Gupta & Gupta
3. Irrigation Water Resources Engineering by Arora K.L., Standard Book Publishing Co., Delhi, 1996.
4. Irrigation Engineering by R.K. Sharma and T.K. Sharma, S. Chand Publishers
5. Introduction to hydrology by Warren Viessvann, Jr, Garyl. Lewis, PHI

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE23) HIGHWAY ENGINEERING

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Surveying Theory

SYLLABUS CONTENT:

UNIT I
HIGHWAY DEVELOPMENT AND PLANNING
Highway Development in India – Necessity for Highway Planning- Different Road Development Plans; Classification of Roads - Road Network Patterns – Highway Alignment- Factors affecting Alignment- Engineering Surveys – Drawings and Reports – Highway Project.

UNIT – II
HIGHWAY GEOMETIC DESIGN
Importance of Geometric Design - Design controls and Criteria - Highway Cross Section Elements - Sight Distance Elements- Stopping Sight Distance, Overtaking Sight Distance and Intermediate Sight Distance - Design of Horizontal Alignment - Design of Super elevation and Extra widening- Design of Transition Curves-Design of Vertical alignment-Gradients- Vertical curves.

UNIT – III
TRAFFIC ENGINEERING & REGULATIONS
Basic Parameters of Traffic-Volume, Speed and Density - Traffic Volume Studies - Data Collection and Presentation - Speed studies - Data Collection and Presentation - Origin & Destination studies, Parking Studies – On street & Off street Parking - Road Accidents - Causes and Preventive Measures - Accident Data Recording – Condition Diagram and Collision Diagrams - Traffic Signs – Types and Specifications – Road Markings - Need for Road Markings-Types of Road Markings - Design of Traffic Signals – Webster Method.

UNIT IV
PAVEMENT MATERIALS AND MIX DESIGN
Types of pavement structures, functions of pavement component layers, materials used in pavements, basic soil properties relevant to pavement applications, properties and testes on materials used in pavements. bituminous mix design using Marshall method.

UNIT V
DESIGN OF FLEXIBLE AND RIGID PAVEMENTS

Stresses in flexible pavements, fundamental design concepts; variables considered in pavement design, design of flexible pavement using IRC method, stresses in rigid pavements, design of joints, design of rigid pavement using IRC method.

Course Outcomes:

After completion of this course, students should be able to

CO1: Analyze the planning process required for highways and design the geometric features

CO2: Describe design element: sight distance, horizontal curvature, super elevation, grades, visibility on vertical curves, cross section elements

CO3: Know the concept of traffic volume and importance of road markings.

CO4: Recommend suitable highway materials and design of flexible, rigid pavement

CO5: Design overlay, analyze the causes for failure of flexible and rigid pavement

Textbooks:

1. Highway Engineering by S.K. Khanna, C.E.G. Justo and Veeraraghavan A, Nemchand & Bros., 10th edition (2013).
2. Traffic Engineering & Transportation Planning – Dr.L.R.Kadyali, Khanna Publications – 6th Edition – 1997.

References:

1. Principles of Traffic and Highway Engineering – Garber & Hoel, Cengage Learning.
2. Principles and Practices of Highway Engineering – Dr.L.R.Kadiyali and Dr.N.BLal - Khanna Publications.
3. Highway Engineering – S.P.Bindra , Dhanpat Rai & Sons. – 4th Edition (1981)
4. IRC 37-2012 : Tentative guidelines for design of flexible pavement
5. IRC 58-2011: Guidelines for design of plain jointed rigid pavements.
6. IRC 81-1997: Guidelines for design of overlay using Benkalman Beam Deflection Technique.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE36) FOUNDATION ENGINEERING

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites : Geotechnical Engineering

SYLLABUS CONTENT:

UNIT – I

SOIL EXPLORATION: Need – methods of soil exploration – boring and sampling methods – penetration tests – plate load test – pressure meter – planning of soil exploration programme and preparation of the soil investigation report.

UNIT – II

SLOPE STABILITY: Infinite and finite earth slopes – types of failures – factor of safety of infinite slopes – stability analysis of the Swedish slip circle method, method of slices, Bishop's Simplified method of slices – Taylor's Stability Number- stability of slopes of earth dams under different conditions.

UNIT – III

EARTH PRESSURE THEORIES: Rankine's theory of earth pressure – earth pressures in layered soils – Coulomb's earth pressure theory – Culmann's graphical method.

RETAINING WALLS: Types of retaining walls – stability of retaining walls against overturning, sliding, bearing capacity and drainage from the backfill, introduction to reinforced earth walls.

UNIT –IV

SHALLOW FOUNDATIONS - Types - choice of foundation – location and depth - safe bearing capacity – shear criteria – Terzaghi's, Meyerhof's, Skempton's and IS code methods.

Settlement criteria – allowable bearing pressure based on SPT N value and plate load test – computation of immediate and consolidation settlement – allowable settlements of structures – presumptive bearing capacities from national building code.

UNIT -V

PILE FOUNDATION: Types of piles – load carrying capacity of piles based on static pile formulae – dynamic pile formulae – pile load tests - load carrying capacity of pile groups in sands and clays – Settlement of pile groups – negative skin friction - introduction to laterally loaded piles.

WELL FOUNDATIONS: Types – different shapes of wells – forces on wells - components of wells – functions and design criteria – sinking of wells – tilts and shifts.

Course Objectives

After completion of this course, students should be able to

CO1: Understand soil exploration methods and calculate the bearing capacity of soils.
CO2: Detect the failures in slopes and suggest appropriate improvement methods.
CO3: Determine the earth pressures and provide sustainable retaining structures
CO4: Analyze and design shallow foundations.
CO5: Analyze and design deep foundations

Textbooks:

1 Basic and Applied Soil Mechanics by Gopal Ranjan & ASR Rao, New age International Pvt. Ltd, New Delhi
2. Principles of Geotechnical Engineering by Braja M.Das, Cengage Learning Publishers.
3. Soil Mechanics and Foundation Engineeringby VNS Murthy, CBS Publishers and Distributors.

References:

1. Geotechnical Engineering Principles and Practices by Cuduto, PHI International.
2. Analysis and Design of Substructures – Swami Saran, Oxford and IBH Publishing company Pvt Ltd (1998).
3. Geotechnical Engineering by S. K.Gulhati & Manoj Datta – Tata Mc.Graw Hill Publishing company New Delhi. 2005.
4. Bowles, J.E., (1988) Foundation Analysis and Design – 4th Edition, McGraw-Hill Publishing company, Newyork.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE37) ADVANCED SURVEYING

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Surveying

SYLLABUS CONTENT:

UNIT – I : Geodetic Surveying: Definition, importance, triangulation system, order of triangulation, size and shape of triangulation, strength of figure criterion, triangulation fieldwork, base line measurement- tape corrections, problems in baseline measurement, measurement of angles.

UNIT –II : Hydrographic Surveying: Tides-lunar tides, solar tides, spring and neap tides, measurement of tides- shore lines, soundings, sounding equipments, locating soundings by cross rope method and range and time intervals-mean sea level-prediction of tides, Triangulation Adjustments.

UNIT – III : Photogrammetric Surveying: Basic principles,-photo theodolite, horizontal and vertical angles from terrestrial photographs, elevation of a point by photographic measurement, determination of focal length of the lens, Aerial camera- scale of vertical photograph, scale of tilted photograph, combined effects of tilt and relief, stereoscopic vision, mosaics, Relief Displacement, Ground Coordinates for vertical plotting, Parallax Measurement.

UNIT – IV: Astronomical Surveying: Spherical Trigonometry, latitude and longitude, solar system, astronomical teams, coordinate systems-altitude.

UNIT – V : Total stations & GPS: Importance, measurement of horizontal angles, vertical angles, horizontal distance, slope distance, height of object-remote elevation measurement (REM), remote distance measurement (RDM)-radial and continuous distances for measuring the lengths and sides of the closed circuits, areas and perimeters calculations.

COURSE OUTCOMES

After completion of this course, student should be able to

CO1: Understand the traiangulation method,system,baseline measurements and corrections

CO2: Apply different methods to find locations

CO3: Understand the basic principles of theodolite,photogrammetric measurements,aerial camera views

CO4: Understand the terminology and concepts of astronomical surveying, different types of systems

CO5: Apply the knowledge of Total Station and GPS in surveying.

TEXT BOOKS

1. 'Surveying and Levelling' by R. Subramanian, Oxford University Press, New Delhi.
2. A text book of Surveying' by C. Venkatramaiah, University Press, New Delhi.
3. 'Surveying Vol. II and Vol. III (Higher Surveying)' by Dr. B. C. Punmia, Ashok K. Jain and Arun K. Jain, Laxmi Publications Pvt. Ltd., New Delhi.
4. 'Advanced Surveying' by Satheesh Gopi, R. Sathikumar and N. Madhu, Pearson, New Delhi.

REFERENCES

1. 'Remote Sensing and its Applications' by L A R Narayan, Universities Press, New Delhi.
2. 'Geographical Information Science' by Narayan Panigrahi, Universities Press, New Delhi.
3. 'Basics of Remote Sensing and GIS' by Dr. S. Kumar, University Science Press, New Delhi.

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE38) GROUND IMPROVEMENT TECHNIQUES

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites : Geotechnical Engineering

SYLLABUS CONTENT

Unit. I

Introduction to Engineering Ground Modification: Need and objectives, Identification of soil types, In situ and laboratory tests to characterise problematic soils; Mechanical, Hydraulic, Physico-chemical, Electrical, Thermal methods, etc. and their applications.

Unit. II

Mechanical Modification – Principles of soil densification – Properties of Compacted soil, Compaction control tests, Specification of compaction requirements, Blasting Vibrocompaction, Dynamic Tamping and Compaction piles.

Unit. III

Hydraulic Modification – Objectives and techniques, traditional dewatering methods and their choice, Design of dewatering system, Electro-osmosis, Filtration, Drainage and seepage control with Geosynthetics, Preloading and vertical drains, Electro-kinetic dewatering.

Unit. IV

Physical and Chemical Modification – Modification by admixtures, Shotcreting and Guniting Technology, Modification at depth by grouting, Crack Grouting and compaction grouting, Jet grouting, Thermal Modification, Ground freezing.

Unit. V

Modification by Inclusions and Confinement - Soil reinforcement, reinforcement with strip, bar, mesh, sheet and grid reinforced soil. In-situ ground reinforcement, ground anchors, rock bolting and soil nailing.

Course Outcomes:

After completion of this course, student should be able to

CO1: Select the ground improvement technique which is suitable and economical for soil strengthening.

CO2: Select different techniques based on the various types of soils in-situ.

CO3: Design reinforced earth structures.

CO4: Apply the knowledge of geo-synthetic material for usage.

CO5: Apply the knowledge of modification by confinement.

Text Books:

1.Hausmann, M. R. (1990) – Engineering Principles of Ground Modifications, McGraw Hill publications
2.Mosley – Ground Improvement

References:

1. Koerner, R. M (1994) – Designing with Geosynthetics – Prentice Hall, New Jersey
2. Jones C. J. F. P. (1985) – Earth Reinforcement and soil structures – Butterworths, London.
3. Xianthakos, Abreimson and Bruce - Ground Control and Improvement

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE39) REHABILITATION & RETROFITTING OF STRUCTURES

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Concrete Technology

SYLLABUS CONTENT:

UNIT – I
Introduction - Deterioration of Structures - Distress in the Structures - Causes and Prevention.Mechanism of Damage - Types of Damage.

UNIT – II
Inspection and Testing - Symptoms and Diagnosis of Distress - Damage Assessment - Non-Destructive Testing(NDT).

UNIT – III
Corrosion of Steel Reinforcement – Causes - Mechanism and Prevention. Damage of Structure due to Fire - Fire rating of Structure -, Phenomena of Desiccation.

UNIT – IV
Repair of Structure - Common types of Repair - Repair in Concrete Structures - Repair in Under water Structures – Guniting - Shot Create – Underpinning. Strengthening of Structures - Strengthening Methods – Retrofitting – Jacketing.

UNIT – V
Health Monitoring of the Structures - Use of Sensors - Building Instrumentation.

Course Outcomes:
After completion of this course, students will be able to
CO1: Understand about distress & damage of structures.
CO2: Understand about practical and NDT.
CO3: Understand about corrosion of steel reinforcement.
CO4: Understand about different techniques of repairs of Structures.
CO5: Understand the Health Monitoring of Structures by Sensors.

Text Books:
1.B.L.Gupta and Amit Gupta, "Maintenance and repair of Civil Structures", Standard Publication.
2.A.R.Santakumar, "Concrete Technology" Oxford University Press.
3. CPWD – Handbook on "Repair and Rehabilitation on RCC Buildings".
Reference Books:
1. Bungey, "Non-Destructive Evaluation of concrete Structures "Surrey University Press.
2. W.H.Ranso, "Concrete Repairs and Maintenance Illustrated "RS Means Company.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE40) GEOGRAPHICAL INFORMATION SYSTEM

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT – I:
Development of Georeferencing of maps either from cadastral or AutoCAD based map.

UNIT – II:
Identification of the best locations of ground control points and mosaicing the different sources of maps of information like top sheets & satellite data and other drawings.

UNIT – III:
Digitization and GIS coordination.

UNIT – IV:
GIS interface and features using open Source Software QGIS.

UNIT – V:
Case example of mapping like water distinguishes, Road alignment road network etc.

COURSE OUTCOMES:
CO1: Understand The Concept Of Cadastral Maps
CO2: Able To Identify Ground Points,Different Sources Of Map Information
CO3: Able To Coordinate The Points Through Digital
CO4: Understand The Basics Of Open Source Software
CO5: Applying The GIS In The Maps With Alignemts

TEXT BOOKS:

1.Lo, C.P. & Yeung A.K.W., Concepts and Techniques of Geographic Information Systems, Prentice Hall of India, New Delhi, 2002.
2.Burrough, P.A., Principles of Geographical Information Systems, Oxford Publication, 1998.
3.Clarke, K., Getting Started with Geographic Information Systems, Prentice Hall, New Jersey, 2001.
4.DeMers, M.N., Fundamentals of Geographic Information Systems, John Wiley & Sons, New York, 2000.
5.Geo Information Systems – Applications of GIS and Related Spatial Information Technologies, ASTER Publication Co., Chestern (England), 1992

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE41) CONSTRUCTION MANAGEMENT

B. Tech– VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Building Materials and Constrution Planning

SYLLABUS CONTENT

UNIT-I

Management process- Roles. Management theories. Social responsibilities. Planning and strategic management strategy implementation . Decision making: tools and techniques — Organizational structure. Human resource management- motivation, performance- leadership.

UNIT-II

Classification of Construction projects, Construction stages, Resources- Functions of Construction Management and its Applications.Preliminary Planning- Collection of Data-Contract Planning — Scientific Methods of Management: Network Techniques in construction management – Bar chart, Gant chart, CPM, PERT- Cost & Time optimization.

UNIT-III

Resource planning – planning for manpower, materials, costs, equipment. Labour, - Scheduling .Forms of scheduling – Resource allocation.Budget and budgetary control methods

UNIT-IV

Contract – types of contract, contract document, specification, important conditions of contract — tender and tender document – Deposits by the contractor – Arbitration. Negotiation – M.Book – Muster roll -stores.

UNIT-V

Management Information System – Labour Regulations: Social Security – welfare Legislation – Laws relating to Wages, Bonus and Industrial disputes, Labour Administration – Insurance and Safety Regulations – Workmen's Compensation Act - other labour Laws – Safety in construction: legal and financial aspects of accidents in construction. occupational and safety hazard assessment. Human factors in safety. Legal and financial aspects of accidents in construction.Occupational safetyand hazard assessment

COURSE OUTCOMES:

CO1: Understand the management theories,roles,decision making techniques
CO2: Understand network techniques, management and its applications CPM & PERT
CO3: Able to get knowledge on resource planning,methods of budgets.
CO4: Understand the concepts of contract,types of contract.
CO5: Learn about legal and financial aspects, safety systems.

TEXT BOOKS:

1.Ghalot, P.S., Dhir,D.M., Construction Planning and Management, Wiley Eastern Limited,1992.
2.Chitkara,K.K., Construction Project Management, Tata McGraw Hill Publishing Co, Ltd., New Delhi, 1998.
3.Punmia,B,C., Project Planning and Control with PERT and CPM, Laxmi Publications, new delhi,1987.

REFERENCE:

1. Construction Management And Planning by: sengupta, b. /guha, h. tata mcgraw-hill publications.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18EN04) HUMAN VALUES AND PROFESSIONAL ETHICS

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

SYLLABUS CONTENT

Unit-1 Human Values: Morals, values, ethics – integrity – work ethics – service learning – civic virtue – respect for others – living peacefully – Caring – sharing – honesty – courage – valuing time – cooperation – commitment – empathy – self-confidence – spirituality – character.

Unit II Professional Ethics: Profession and professionalism – Two models of professionalism – Professional etiquette – Three types of Ethics or morality Responsibility in Engineering standards –Engineering Ethics – Positive and Negative faces.

Unit III Professional Responsibilities: Ethical standards Vs Professional Conduct – Zero Tolerance for Culpable Mistakes – Hazards and Risks- Risk benefit analysis-congeniality, collegiality and loyalty. Respect for authority – conflicts of interest – occupational crime.

Unit IV Professional Rights: Professional rights and employee rights communicating risk and public policy – Whistle blowing – Collective bargaining. Professionals /engineers as managers, advisors, experts, witnesses and consultants – moral leadership-

Unit V Ethics in global context: Global issues in MNCs-Problems of bribery, extortion, and grease payments – Problem of nepotism, excessive gifts.

COURSE OUTCOMES

After the course students will be able to

CO1: It ensures students sustained happiness through identifying the essentials of human values and skills.

CO2: It facilitates a correct understanding between profession and happiness.

CO3: It helps students understand practically the importance of trust, mutually satisfying human behavior and enriching interaction with nature.

CO4: Ability to develop appropriate technologies and management patterns to create harmony in professional and personal life.

CO5: Learn ethichs in Global Issues and problems in extortion

Test Book:

1.Aryasri, *Human Values and Professional Ethics*, Maruthi Publications.

Reference Books:

1.S B George, Human Values and Professional Ethics, Vikas Publishing.
2.S K Chakraborthy & D Chakraborthy: Human Values and Ethics, Himalaya.
3.M. Govindarajan, S. Natarajan, & V.S. Senthilkumar: Engineering Ethics (Includes Human Values), HI Learning Pvt. Ltd., New Delhi -110001.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CS04) DATABASE MANAGEMENT SYSTEMS

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT- I

Introduction - Database system Applications - Database System versus File Systems - View of Data– Instances and schema - Data Models - Database Languages -DDL-DML - Database Users and Administrator –Transaction Management - Database System Structure-Application Architectures – History of Database Systems.

UNIT- II

Database Design and ER model – Basic concepts - Entity sets and Relationship Sets – Constraints - Keys - Design Issues - Entity-Relationship Diagram- Weak Entity Sets - Extended E-R Features - Designing of an E-R Database Schema-Reduction of an E-R Schema to Tables.

UNIT – III

Introduction to the Relational Model – Structure of Relational Databases - Relational Algebra –Relational Calculus – Domain relational Calculus , Tuple Relational Calculus - Integrity and Security –Domain Constraints ,Referential Integrity Constraints-Triggers-security and Authorization – SQL- Basic Structure, Set operations ,Aggregate Operations –Null values- Nested Sub queries – Views –Modification of Database-Joined relations ,Data Definition Language.

UNIT – IV

Informal Design guidelines for Relation Schema-Functional Dependencies– Normal Forms based on Primary Keys-Decomposition – Desirable properties of Decomposition – First Normal Form,Second Normal Form–Third Normal Form-Boyce- Codd Normal Form - Multivalued Dependency-Fourth Normal Form-Fifth Normal Form-Transactions-Transaction Concept- Transaction state- Implementation of atomicity and Durability- Concurrent Executions – Serializability, Recoverability-Implementation of Isolation

UNIT-V

Concurrency Control-Lock Based Protocols, Dead Lock Handling ,Multiple Granularity ,Time-stamp Based Protocols, Validation Based Protocols.
Recovery System: Failure Classification, Storage Structure , Recovery and Atomicity,Log Based recovery ,Shadow Paging, Recovery with concurrent transactions.

COURSE OUTCOMES:

CO1: Ability to understand the fundamental concepts of database management.
CO2: Ability to analyze database models & Entity Relationship models and to draw the E-R diagram for the given case study.
CO3: Apply relational Database Theory, and be able to write relational algebra expressions for queries.
CO4: Utilize the knowledge of basics of SQL and construct queries using SQL.
CO5: Apply Normalization Process to construct the database. Explain Basic Issues of transaction processing

TEXTBOOKS.

1. Database System Concepts, Silberschatz, Korth , sixth Edition, McGraw hill.
2. Database Systems,Ramez Elmasri Shamkant B.Navathe Pearson Education,6th edition

REFERENCES :

1. Database Management Systems, Raghuramakrishnan, Johannes Gehrke, TATA Mc Graw Hill
2. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
3. Database Systems ,The Complete Book, Hector Garcia-Molina, Jeffrey D.Ullman,Jennifer Widom.
4. An Introduction to Database Systems, C.J. Date ,Eighth edition

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18ME36) POWER PLANT ENGINEERING

B. Tech–VI Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT – I

INTRODUCTION TO THE SOURCES OF ENERGY: Steam power plant: plant layout, working of different circuits, fuel and handling equipments, types of coals, coal handling, choice of handling equipment, coal storage. Ash handling systems. Combustion process: properties of coal – overfeed and underfeed fuel beds, traveling grate stokers, spreader stokers, retort stokers, pulverized fuel burning system and its components, combustion needs and draught system, cyclone furnace, design and construction. Dust collectors, cooling towers and heat rejection. Corrosion and fed water treatment.

UNIT – II

INTERNAL COMBUSTION ENGINE PLANT: Diesel power plant: introduction – ic engines, types, construction. Plant layout with auxiliaries. Fuel supply system, air starting equipment, lubrication and cooling system, super charging.
Gas turbine plant: introduction – classification – construction – layout with auxiliaries – principles of working of closed and open cycle gas turbines. Combined cycle power plants and comparison.
Direct energy conversion: solar energy, fuel cells, thermo electric and thermo ionic, nhd generation.

UNIT – III

HYDRO ELECTRIC POWER PLANT: Water power – hydrological cycle/flow measurement – drainage area characteristics – hydrographs – storage and pondage – classification of dams and spillways.
Hydro projects and plant: classification – typical layouts – plant auxiliaries – plant operation pumped storage plants. Application of hydro power plant, safety measures in hydro power station, performance of water turbine, comparison of hydroelectric power plant and steam power plant.

UNIT – IV

NUCLEAR POWER STATION: Nuclear fuel – breeding and fertile materials – nuclear reactor – reactor operation.
Types of reactors: pressurized water reactor, boiling water reactor, sodium-graphite reactor, fast breeder reactor, homogeneous reactor, gas cooled reactor, radiation hazards and shielding – radioactive waste disposal.

UNIT – V
POWER PLANT ECONOMICS AND ENVIRONMENTAL CONSIDERATIONS

Capital cost, investment of fixed charges, operating costs, general arrangement of power distribution. Load curves, load duration curve. Definitions of connected load. Maximum demand, demand factor, average load, load factor, diversity factor – related exercises. Effluents from power plants and impact on environment – pollutants and pollution standards – methods of pollution control.

COURSE OUTCOMES:

This course helps the students to

CO1: Understand the layout of power generation units for different energy sectors.
CO2: Identify different subsystem and systems of power generation sector.
CO3: Compare existing and emerging alternative energy sources
CO4: Analyze the opportunities in contributing towards the solving of energy crisis.
CO5: Discuss general arrangement of power distribution.

TEXT BOOKS

1.P.C. Sharma, "power plant engineering", S.K .Kataria publication, 2013, ISBN-13: 9788189757205.
2.Arora and S. Domkundwar, "a course in power plant engineering", 2nd edition TMH, ISBN: 9780070435995.

REFERENCE BOOKS

1. Rajput, "a textbook of power plant engineering", laxmi publications, ISBN no.: 978-81-318-0255-7.
2. Ramalingam, "power plant engineering", SCITECH publishers, ISBN-13:
3. P.K. Nag, "power plant engineering": II edition, TMH, ISBN number: 978-0070648159.
4. Elanchezhian, "power plant engineering", i.k. International publications, ISBN-13: 978-8189866303.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18EN03) ADVANCED ENGLISH COMMUNICATION SKILLS LAB

B. Tech–VI Sem.

L	T	P	C
0	0	3	1.5

1.Introduction

The introduction of the Advanced English Communication Skills Lab is considered essential at 3rd year level. At this stage, the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context.

The proposed course should be a laboratory course to enable students to use 'good' English and perform the following:

- Gather ideas and information to organize ideas relevantly and coherently.
- Engage in debates.
- Participate in group discussions.
- Face interviews.
- Write project/research reports/technical reports.
- Make oral presentations.
- Write formal letters.
- Transfer information from non-verbal to verbal texts and vice-versa.
- Take part in social and professional communication.

2.Course Objectives:

This Lab focuses on using multi-media instruction for language development to meet the following targets:

- To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.
- To prepare all the students for their placements.

SYLLABUS CONTENT

The following course content to conduct the activities is prescribed for the Advanced English Communication Skills (AECS) Lab:

1. Fundamentals of Inter-personal Communication and Building Vocabulary - Starting a conversation – responding appropriately and relevantly – using the right body language – Role Play in different situations and Discourse Skills- using visuals - Synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, business vocabulary, analogy, idioms and phrases, collocations and usage of vocabulary.

2. **Reading Comprehension** –General Vs Local comprehension, reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, critical reading & effective googling.

3. **Writing Skills** – Structure and presentation of different types of writing – *letter writing/Resume writing/ e-correspondence/ Technical report writing/ Portfolio writing* – planning for writing – improving one's writing.

4. **Presentation Skills** – Oral presentations (individual and group) through JAM sessions/seminars/**PPTs** and written presentations through posters/projects/reports/ e-mails/assignments etc.

5. **Group Discussion and Interview Skills** – Dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and organization of ideas and rubrics for evaluation- Concept and process, pre-interview planning, opening strategies, answering strategies, interview through tele-conference and video-conference and Mock Interviews.

Minimum Requirement:

The Advanced English Communication Skills (AECS) Laboratory shall have the following infra-structural facilities to accommodate at least 35 students in the lab:

- Spacious room with appropriate acoustics
- Round Tables with movable chairs
- Audio-visual aids
- LCD Projector
- Public Address system
- P – IV Processor, Hard Disk – 80 GB, RAM–512 MB Minimum, Speed – 2.8 GHZ
- T. V, a digital stereo & Camcorder
- Headphones of High quality

Prescribed Lab Manual: A book titled ***A Course Book of Advanced Communication Skills Lab*** published by Universities Press, Hyderabad.

Suggested Software:

The software consisting of the prescribed topics elaborated above should be procured and used.

- Oxford Advanced Learner's Compass, 8th Edition
- DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.
- Lingua TOEFL CBT Insider, by Dreamtech
- TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
- The following software from 'train2success.com'
  - Preparing for being Interviewed
  - Positive Thinking
  - Interviewing Skills

- **Telephone Skills**
- **Time Management**
- **Skillmate**
- **Presentation skills, Cambridge** (with VCD)

Books Prescribed:

1. **Technical Communication** by Meenakshi Raman & Sangeeta Sharma, Oxford University Press 2009.
2. **English Language Communication : A Reader cum Lab Manual** Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, Anuradha Publications, Chennai 2008.
3. **Advanced Communication Skills Laboratory Manual** by Sudha Rani, D, Pearson Education 2011.
4. **Technical Communication** by Paul V. Anderson. 2007. Cengage Learning pvt. Ltd. New Delhi.
5. **Business and Professional Communication:** Keys for Workplace Excellence. Kelly M. Quintanilla & Shawn T. Wahl. Sage South Asia Edition. Sage Publications. 2011.

Suggested Books:

1. **The Basics of Communication: A Relational Perspective.** Steve Duck & David T. McMahan. Sage South Asia Edition. Sage Publications. 2012.
2. **English Vocabulary in Use** series, Cambridge University Press 2008.
3. **Management Shapers Series** by Universities Press(India)Pvt Ltd., Himayatnagar, Hyderabad 2008.
4. **Handbook for Technical Communication** by David A. McMurrey & Joanne Buckley. 2012. Cengage Learning.
5. **Communication Skills** by Leena Sen, PHI Learning Pvt Ltd., New Delhi, 2009.
6. **Handbook for Technical Writing** by David A McMurrey & Joanne Buckely CENGAGE Learning 2008.
7. **Job Hunting** by Colm Downes, Cambridge University Press 2008.
8. **Master Public Speaking** by Anne Nicholls, JAICO Publishing House, 2006.
9. **English for Technical Communication for Engineering Students, Aysha Vishwamohan, Tata Mc Graw-Hil 2009.**
10. Books on **TOEFL/GRE/GMAT/CAT/ IELTS** by Barron's/DELTA/Cambridge University Press.
11. **International English for Call Centres** by Barry Tomalin and Suhashini Thomas, Macmillan Publishers, 2009.
12. **Towards Career Advancement** - Excerpts from a Professor's Folio by **P. Satyanarayana Prof. of English, Vaagdevi College of Engineering** , published by Vaagdevi Group of Colleges Engineering, Warangal (T.S.) India, 2015.

DISTRIBUTION AND WEIGHTAGE OF MARKS:

- The practical examinations for the Laboratory practice shall be conducted as per the University norms prescribed for the core engineering practical sessions.
- For the English Language lab sessions, there shall be continuous evaluation during the year for 30 sessional marks and 70 End Examination marks. Of the 30 marks, 20 marks shall be awarded for day-to-day work and 10 marks to be awarded by

conducting Internal Lab Test(s). The End Examination shall be conducted by the teacher concerned, by inviting the External Examiner from outside. In case of the non-availability of the External Examiner, other teacher of the same department can act as the External Examiner.

Mini Project: As a part of Internal Evaluation

- Seminar/ Professional Presentation
- A Report on the same has to be prepared and presented.
- *Teachers may use their discretion to choose topics relevant and suitable to the needs of students.*
- *Not more than two students to work on each mini project.*
- *Students may be assessed by their performance both in oral presentation and written report.*

COURSE OUTCOMES

CO 1: Developing effectively and appropriate vocabulary to be used contextually.
CO 2: Inculcating flair for Writing and felicity in written expression.
CO 3: Enhancing job prospects.
CO 4: Acquiring effective speaking abilities

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE24) HIGHWAY ENGINEERING LAB

B. Tech–VI Sem.

L	T	P	C
0	0	2	1

Pre Requisites: Highway Engineering Theory

LIST OF EXPERIMENTS:

I. ROAD AGGREGATES:

1. Aggregate Crushing value
2. Aggregate Impact Test
3. Specific Gravity and Water Absorption
4. Abrasion Test
5. Attrition Test
6. Flakiness and elongation Indices of coarse Aggregates

II. BITUMINOUS MATERIALS:

1. Penetration Test
2. Ductility Test
3. Softening Point Test
4. Flash and Fire Point Tests
5. Marshall Mix design

III. TRAFFIC STUDIES

1. Traffic volume counts-Mid Blocks
2. Traffic volume counts-Junctions
3. Spot speed studies
4. Parking Studies

Course Outcomes:

After completion of this course, students should be able to

CO1: Characterize the pavement materials based on properties
CO2: Perform quality control tests on pavement materials
CO3: Gain knowledge on basic understanding of mix design
CO4: Understand the salient features of traffic studies.

Text Book:

1.Laboratory Manual in Highway Engineering by Ajay K.Duggal and Vijay P. Puri - Newage Publishers.
2.Highway Material Testing by Khanna S.K., Justo C.E.G, NemChand & Bros.
3.Principles and practice of Highway Engineering, L.R Kadiyali & N.B.Lal, Khanna, 2007.
4.Traffic Engineering and Transportation planning, L.R Kadiyali, Khanna publications, 2007.

***

5.

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE25) STRUCTURAL DESIGN AND DETAILING LAB

B. Tech–VI Sem.

L	T	P	C
0	0	3	1.5

Prerequisites: Design RC Structures & Design of Steel Strutures

LIST OF EXERCISES:

Detailing:

1. Detailing of reinforcement in Cantilever, Simply supported and Continuous Beams (Both Singly & Doubly Reinforced Beams)
2. Detailing of reinforcement in canopy & columns (both uniaxial & biaxial)
3. Detailing of reinforcement in RC isolated footings square, rectangular, circular and combined footings
4. Detailing of reinforcement in RC one-way, two-way slabs and doglegged staircases

Drawing:

5. Drawing of Steel bolted and welded connections
6. Drawing of steel compression and tension members
7. Drafting of steel beams-built-up sections
8. Drafting of steel plate girders
9. Drafting of steel roof truss

Analyzing:

1. Analysis of Beams (Simply Supported and Continuous)
2. Analysis of Plane Frames for D.L & L.L
3. Analysis of Space Frames for D.L & L.L
4. Analysis of Space Frames subjected to wind & Earthquake Loads.
5. Analysis & Design of Residential Building (G + 2 Floors)
6. Analysis & Design of Roof Truss

Note: Drafting of all the exercises is to be carried out using commercially available drafting softwares.

Course Outcomes

After completion of this course, students should be able to

CO1: Draw and show the detailing of reinforcement in footings.

CO2: Draw and show the detailing of reinforcement of different types of columns

CO3: Draw and show the detailing of reinforcement of different types of beams

CO4: Draw the steel structures.

****

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18MC05) LOGICAL REASONING AND QUANTITATIVE APTITUDE

B. Tech–VI Sem.

L	T	P	C
2	0	0	0

SYLLABUS CONTENT:

Unit – I: Logical Reasoning

1.Coding and Decoding
2.Distance and Directions
3.Classifications
4.Odd man out and series
5.Clocks and Calendars etc.

Unit – II: Logical ability

1. Blood relations
2.Seating Arrangements
3.Figure Analysis
4.Puzzles etc.

Unit – III: Number systems

1.LCM and HCF
2.Ratio and proportion
3.Simple interest and compound interest
4.Profit and Loss etc.

Unit – IV: Arithmetic ability

1.Time and work
2.Partnerships
3.Time speed and distance
4.Problems on Trains etc.

Unit – V: Mathematical ability

1.Sequence and series
2.Permutations and combination
3.General probability etc.

Text Books:

1. A modern approach to verbal and non-verbal reasoning by Dr. R.S. Aggarwal.
2.Quantitative Aptitude by Abhijit Guha Tata Mc Graw-Hill Company Limited.

Reference Books:

3.Quantitative Aptitude by P.A. Anand (Wiley)
4.Quantitative Aptitude by Dr. R.S. Agarwal.
5.Objective Arithmetic by S.L. Gulati.

Course Outcomes:

By studying logical reasoning and quantitative aptitude students are able to:

CO1: To improve their logical thinking in terms of general and mathematical concepts.
CO2: To improve students to compete in academic as well as competitive levels through which students are able to solve the real world problems.
CO3: To make quick decisions to face the critical problems.
CO4: Improve their mathematical skills in various general aspects to solve real world problems.

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE26) ESTIMATION AND VALUATION PRACTICE

B. Tech–VII Sem.

L	T	P	C
3	1	0	4

Pre Requisites : Nil

SYLLABUS CONTENT

UNIT I QUANTITY ESTIMATION

Philosophy – Purpose – Methods of estimation – Types of estimates – Approximate estimates –Detailed estimate – Estimation of quantities for buildings, bituminous and cement concrete roads, septic tank, soak pit, retaining walls – culverts (additional practice in the classroom using computer softwares)

UNIT II RATE ANALYSIS AND COSTING

Standard Data – Observed Data – Schedule of rates – Market rates – Standard Data for Man Hours and Machineries for common civil works – Rate Analysis for all Building works, canals, and Roads– Cost Estimates (additional practice in the classroom using Computer softwares) - (Analysis of rates for the item of work asked, the data regarding labour, rates of material and rates of labour to be given in the Examination Question Paper)

UNIT III SPECIFICATIONS, REPORTS AND TENDERS

Specifications – Detailed and general specifications – Constructions – Sources – Types of specifications – Principles for report preparation – report on the estimate of residential building – Culvert – Roads – TTT Act 2000 – Tender notices – types – tender procedures – Drafting model tenders , E-tendering-Digital signature certificates-Encrypting -Decrypting – Reverse auctions.

UNIT IV CONTRACTS

Contract – Types of contracts – Formation of contract – Contract conditions – Contract for labour, material, design, construction – Drafting of contract documents based on IBRD / MORTH Standard bidding documents – Construction contracts – Contract problems – Arbitration and legal requirements.

UNIT V VALUATION

Definitions – Various types of valuations – Valuation methods - Necessity – Capitalised value – Depreciation – Escalation – Valuation of land – Buildings – Calculation of Standard rent – Mortgage – Lease.

Course Outcomes:

After completion of this course, student should be able to

CO1: Evaluate the detailed estimate of RC building
CO2: Evaluate the rate for construction activities
CO3: Prepare the report and tender for the contact works.
CO4: Understands what type of contract is used for a specific work
CO5: Understands the importance of valuation

Text Books

1.Estimating and Costing by B.N. Dutta, UBS publishers, 2000.
2.Estimating and Costing by G.S. Birdie

Reference books :

1.Standard Schedule of rates and standard data book by public works department.
2.I.S. 1200 (Parts I to XXV–1974/ method of measurement of building and Civil Engineering works – B.I.S.)
3.Estimation, Costing and Specifications by M. Chakraborthi; Laxmi publications.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE27) ENVIRONMENTAL ENGINEERING

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT – I
Introduction: Waterborne diseases – protected water supply – Population forecasts, design period – types of water demand – factors affecting – fluctuations – fire demand – water quality and testing – drinking water standards: sources of water - Comparison from quality and quantity and other considerations – intakes – infiltration galleries.

UNITII
Layout and general outline of water treatment units – sedimentation – principles – design factors – coagulation-flocculation clarifier design – coagulants - feeding arrangements. Filtration – theory – working of slow and rapid gravity filters – multimedia filters – design of filters – troubles in operation - comparison of filters – disinfection – theory of chlorination, chlorine demand - other disinfection practices- Miscellaneous treatment methods.

UNIT-III
Distribution system requirement –method and layouts -Design procedures- Hardy Cross and equivalent pipe methods pipe – joints, valves such as sluice valves, air valves, scour valves and check valves water meters – laying and testing of pipelines – pump house - Conservancy and water carriage systems – sewage and storm water estimation – time of concentration – storm water overflows combined flow

UNIT - IV
Characteristics of sewage – cycles of decay – decomposition of sewage, examination of sewage – B.O.D. Equation – C.O.D. Design of sewers – shapes and materials – sewer appurtenances manholes – inverted siphon – catch basins – flushing tanks – ejectors, pumps and pumphouses – house drainage – components requirements – sanitary fittings-traps – one pipe and two pipe systems of plumbing – ultimate disposal of sewage – sewage farming – dilution.

UNIT – V
Waste water treatment plant – Flow diagram - primary treatment Design of screens – grit chambers – skimming tanks – sedimentation tanks – principles of design – Biological treatment – trickling filters – standard and high rate – Construction and design of oxidation ponds. Sludge digestion – factors effecting – design of Digestion tank – Sludge disposal by drying – septic tanks working principles and design – soak pits.

COURSE OUTCOMES:

After completion of this course, students should be able to

CO1: Acquire the knowledge of the water borne diseases and Serve the community by making people aware with the different pollution related problems.

CO2: Demonstrate the steps involved in water filtering.

CO3: Acquire the knowledge of water distribution system and their fittings.

CO4: Explain wastewater collection systems & design sewers.

CO5: Gain knowledge of the different processes of water treatment and would be able to assist in the design of the water treatment plants.

TEXT BOOKS:

1.Water supply and sanitary Engineering by G.S. Birdi, Dhanpat Rai & Sons Publishers.
2.Water Supply & Environmental Engineering by A.K. Chatterjee.
3.Water and Waste Water Technology by Mark J Hammar and Mark J.Hammar Jr.

REFERENCE BOOKS :

1.Water and Waste Water Technology by Steel
2.Water and Waste Water Engineering by Fair Geyer and Okun
3.Text book of Environmental Engineering by P. Venugopal Rao (PHI)
4.Waste water Engineering by Metcalf and Eddy.
5.Unit operations in Environmental Engineering by R. Elangovan and M.K. Sasutharam

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE42) WATERSHED MANAGEMENT

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Engineering Hydrology

SYLLABUS CONTENT:

UNIT-I

INTRODUCTION: Concept of watershed development, objectives of watershed development, need for watershed development in India, Integrated and multidisciplinary approach for watershed management.

CHARACTERISTICS OF WATERSHED: size, shape, physiography, slope, climate, drainage, land use, vegetation, geology and soils, hydrology and hydrogeology, socio-economic characteristics, basic data on watersheds.

Watershed delineation – Runoff Computations from a watershed – Flood Frequency Analysis – Gumbell, Log Pearson and Weibull Methods of Analysis.

UNIT-II

PRINCIPLES OF EROSION: Types of erosion, factors affecting erosion, effects of erosion on land fertility and land capability, estimation of soil loss due to erosion, Universal soil loss equation.

MEASURES TO CONTROL EROSION: Contour techniques, ploughing, furrowing, trenching, bunding, terracing, gully control, rockfill dams, brushwood dam, Gabion.

UNIT-III

WATER HARVESTING: Rainwater Harvesting, catchment harvesting, harvesting structures, soil moisture conservation, check dams, artificial recharge, farm ponds, percolation tanks.

UNIT-IV

FOREST AND GRASS LAND MANAGEMENT: Interpretation of Satellite Imageries-Land use and Land Cover. Land capability classification, management of forest, agricultural, grassland and wild land. Reclamation of saline and alkaline soils.

UNIT-V

ECOSYSTEM MANAGEMENT: Role of Ecosystem, crop husbandry, soil enrichment, inter, mixed and strip cropping, cropping pattern, sustainable agriculture, bio-mass management, dry land agriculture, Silvi pasture, horticulture, social forestry and afforestation.

Planning of watershed management activities, peoples participation, preparation of action plan, administrative requirements- Reservoir Routing..

COURSE OUTCOMES:

After completion of this course, students should be able to

CO1: Comprehend the physical, biological and environmental aspects and their interrelations within a watershed

CO2: Identify the causes of soil erosion

CO3: Plan and design water harvesting and groundwater recharging structures

CO4: Choose and apply available system tools for systematic intervention.

CO5: Formulate a vision and design a sustainable watershed management plan that shows an integrated approach towards the multiple use of land- and water resources and social equity and economic availability.

TEXT BOOKS:

1. Watershed Management by JVS Murthy, - New Age International Publishers.
2. Soil and Water Conservation Practices by Suresh Rao, Standard Publishers, 1998
3. Water Resource Engineering by R.Awurbs and WP James, - Prentice Hall Publishers.

REFERENCES:

1. Land and Water Management by VVN Murthy, - Kalyani Publications.
2. Irrigation and Water Management by D.K.Majumdar, Printice Hall of India
3. Water Resources Conservation and Management by Chatterjee, S. N. Atlantic Publishers, 2008.

****

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18CE43) TRANSPORTATION ENGINEERING

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Highway engineering

SYLLABUS CONTENT:

UNIT- I

TRAFFIC SYSTEMCHARACTERSTICS

Human-vehicle-environment system, Fundamental parameters of traffic and relationships; Microscopic and macroscopic characteristics

UNIT- II

TRAFFIC DATA COLLECTION STUDIES

Traffic study components, types of data; Volume studies; Speed studies; Travel time and delay studies; Intersection studies, Pedestrian studies; Parking studies, Vehicle detection methods;

UNIT- III

HIGHWAY CAPACITY AND LEVEL OF SERVICE

Capacity and level of service; Factors affecting Capacity and LOS; Capacity of Rural Highways, Capacity of Urban Roads; HCM and IRC standards.

UNIT – IV

INTERSECTION DESIGN :

Types of Intersections – Conflicts at Intersections – Requirements of At-Grade Intersections - Types of At-Grade Intersections: Channelized and Un-channelized Intersections – Traffic Islands - Types of Grade Separated Intersections - Rotary Intersection – Concept of Rotary – Design Factors of Rotary – Advantages and Limitations of Rotary Intersections

UNIT- V

TRAFFIC CONTROL DEVICES & HIGHWAY SAFETY

Traffic signs & Markings; Signal Warrants; Signal phasing and Development of phase plans; Fixed and Vehicle activated signals; Webster method; ARRB method; Drew's Method; IRC method; Signal coordination; Area Traffic control. Accident characteristics – Road – Driver – Vehicle; Accident recording and Analysis; Highway Safety Improvement Program; Safety Audit.

Course Outcomes

Student will be able to

CO1: Understand various components and characteristics of traffic.

CO2: Conduct different traffic studies and analyze the data

CO3: Analyze and determine the LOS of highway

CO4: Analyze and design the intersections

CO5: To know various traffic control devices and principles of highway safety

TEXT BOOKS

1. 'Traffic Engineering: Theory and Practice' by Pignataro LJ., Prentice hall, Inc.
2. 'Traffic and Transport planning' by Kadiyali L.R., Khanna Publishers.

REFERENCES

1. 'Traffic Engineering Hand Book' by Institute of Transportation Engineers, 4 Ed., Prentice Hall
2. 'Traffic Engineering' by Mc Shane, WR and RP Roess, Prentice Hall.
3. 'Highway Traffic analysis and design' by Salter RJ and NB Hounsell, 3rd ed., Macmillan.
4. 'Traffic Planning and Engineering' by Hobbs FD., Pergamon press
5. 'Traffic flow fundamentals' by May, AD., Prentice Hall.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE44) BRIDGE ENGINEERING

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Design of RC Structures, Design of Steel Structures

SYLLABUS CONTENT:

UNIT-I

Fundamentals of Bridges: Importance of bridges, Classification of bridges, Components,Factors effecting types of bridge-natural and economic considerations, Linear water ways and afflux.

Design loads: IRC standard loading, Impact factors, Wind loading, Seismic forces, Longitudinal forces, Centrifugal forces, Buoyancy forces, Thermal forces, Erection stresses, Temperature effects, Standards for railway loading

UNIT-II

Deck Slab Bridge: Design of Reinforced Cement Concrete deck Slab Bridge, Analysis anddesign of Slab culvert as per IRC loading, Analysis and Design of Box Culvert.

T- Beam Bridges:

General features, Introduction to Westergaard"s analysis, Design of the interior panel slab, Courbon"s method of analysis for design of longitudinal and cross girders.

UNIT-III

Plate Girder Bridge: Components of plate Girder Bridge, Design of plate girder bridge forrailway loading.

Steel Truss Bridge: Types of Trusses, General and design features, Design of steel trussbridge as per IRC loading.

UNIT-IV

Bridge Bearings: Types of bearing, forces on bearing, Design of elastomeric bearings, Typesof expansion joints.

Pier and Abutments: Types of piers and abutments, Forces acting, Stability analysis anddesign.

UNIT – V

Bridge Foundation: Types offoundation – Investigation and Design criteria of pile foundation

Bridge Inspection and Maintenance: Inspection of Bridges, Maintenances of Bridges,Rehabilitation, Current design and construction Practice.

Course Outcomes:

After completion of this course, students will be able to

CO1: Obtain knowledge of bridges and its loading

CO2: Design the deck slab and T-Beam bridges

CO3: Contrast components and design of plate girder and steel truss bridges

CO4: Identify the types of bearing and design of piers and abutments in bridges
CO5: Show the importance of bridge inspection and maintenance.

Text Books:

1. N. Krishna Raju, "Design of Bridges", Oxford and IBH Publishing Company Pvt. Ltd.
2. T.R. Jagadeesh and M.A. Jayaram "Design of Bridge Structures", PHI Learning Pvt. Ltd, New Delhi.

Reference Books:

1. Victor DJ., Essentials of Bridge Engineering , Oxford and IBH Publishing Company Pvt. Ltd.
2. B.C. Punmia, Design of Reinforced Concrete Strctures, Vol. II, Laxmi Publishers, New Delhi.
3. Ram Chandra, Design of Steel Structures, Vol. II, Standard book house, New Delhi.
4. IRC 5, 6 and 7, "Code of Practice for Design of Bridges", Indian Road Congress, New Delhi.
5. IS: 800-1984: "Code of practice for steel construction", Bureau of Indian Standards, New Delhi.
6. IS: 456-2000: "Code of practice for Plain and Reinforced Concrete", Bureau of Indian Standards, New Delhi.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE45) PRE STRESSED CONCRETE

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Design of RC Structures

SYLLABUS CONTENT:

UNIT I:

Introduction: Historic development- General principles of prestressing pre-tensioning andpost-tensioning- Advantages and limitations of Prestressed concrete- General principles of PSC- Classification and types of prestressing- Materials- high strength concrete and high tensile steel characteristics.

UNIT II:

Methods and Systems of prestressing: Pretensioning and Posttensioning methods - systems of prestressing Hoyer system, Magnel Blaton system, Freyssinet system and Gifford- Udall System- Lee McCall system.

Flexure: Analysis of sections for flexure- beams prestressed with straight, concentric,eccentric, bent and parabolic tendons- stress diagrams- Elastic design of PSC slabs and beams of rectangular and I sections- Kern line – Cable profile and cable layout.

UNIT III:

Losses of Prestress: Loss of prestress in pretensioned and posttesnioned members due tovarious causes like elastic shortening of concrete, shrinkage of concrete, creep of concrete, relaxation of stress in steel, slip in anchorage, frictional losses.

Shear: General Considerations- Principal tension and compression- Improving shearresistance of concrete by horizontal and vertical prestressing and by using inclined or parabolic cables- Analysis of rectangular and I beams for shear – Design of shear reinforcements- IS Code provisions.

UNIT IV:

Transfer of Prestress in Pretensioned Members : Transmission of prestressing force bybond – Transmission length – Flexural bond stresses – Anchorage zone stresses in post tensioned members – stress distribution in End – block – Anchorage zone reinforcement- IS Provisions – Analysis by – IS methods

UNIT V

Composite Beams: Different Types- Propped and Unpropped- stress distribution- Differential shrinkage- Analysis of composite beams- General design considerations.

Deflections: Importance of control of deflections- Factors influencing deflections– Shortterm deflections of uncracked beams- prediction of long time deflections- IS code requirements.

Course Outcomes:

After completion of this course, students should be able to

CO1: Understand the principles and types of prestressing.
CO2: Know the methods of prestressing and losses of prestress.
CO3: Gain knowledge analyze of beams in flexure and shear.
CO4: Outline the transfer of prestresses force in members.
CO5: Analyze the composite beam and deflection.

TEXT BOOKS:

1. Prestressed concrete by Krishna Raju, Tata Mc Graw Hill Book – Co. New Delhi.
2. Design of prestress concrete structures by T.Y. Lin and Burn, John Wiley, New York.
3. Prestressed concrete by S. Ramamrutham Dhanpat Rai & Sons, Delhi.
4. Prestressed Concrete by N. Rajagopalan Narosa Publishing House
5. Relevant IS Codes.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE46) EARTHQUAKE ENGINEERING

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Structural Engineering –II & RC Design

SYLLABUS CONTENT:

UNIT I

Theory of Vibrations: Elements of a vibratory system- Degrees of Freedom-Continuoussystem-Lumped mass idealization-Oscillatory motion-Simple Harmonic Motion-Free vibration of single degree of freedom (SDOF) system- undamped and damped-critical damping-Logarithmic decrement-Forced vibrations-Harmonic excitation-Dynamic magnification factor-Excitation by rigid based translation for SDOF system-Earthquake ground motion.

Engineering Seismology: Earthquake phenomenon cause of earthquakes-Faults-Platetectonics- Seismic waves- Terms associated with earthquakes-Magnitude/Intensity of an earthquake-scales-Energy released-Earthquake measuring instruments-Seismoscope, Seismograph, accelerograph-strong ground motions- Seismic zones of India.

UNIT II

Conceptual design: Introduction-Functional planning-Continuous load path-Overall form-simplicity and symmetry-elongated shapes-stiffness and strength-Horizontal and Vertical members-Twisting of buildings-Ductility-definition-ductility relationships-flexible buildings-framing systems-choice of construction materials-unconfined concrete-confined concrete-masonry-reinforcing steel.

Introduction to earthquake resistant design: Seismic design requirements-regular andirregular configurations-basic assumptions-design earthquake loads-basic load combinations-permissible stresses-seismic methods of analysis-factors in seismic analysis-equivalent lateral force method.

UNIT III

Reinforced Concrete Buildings: Principles of earthquake resistant deign of RC members-Structural models for frame buildings- Seismic methods of analysis- Seismic deign methods-IS code based methods for seismic design- Response Spectrum Method – Seismic Coefficient method - Seismic evaluation and retrofitting- Vertical irregularities- Plan configuration problems- Lateral load resisting systems-Determination of design lateral forces- Equivalent lateral force procedure- Lateral distribution of base shear.

UNIT IV

Masonry Buildings: Introduction- Elastic properties of masonry assemblage- Categories ofmasonry buildings- Behaviour of unreinforced and reinforced masonry walls-Behaviour of walls- Box action and bands- Behaviour of infill walls- Improving seismic behaviour of masonry buildings- Load combinations and permissible stresses- Seismic design requirements- Lateral load analysis of masonry buildings.

UNIT V

Structural Walls and Non-Structural Elements: Strategies in the location of structuralwalls- sectional shapes- variations in elevation- cantilever walls without openings – Failure mechanism of non-structures- Effects of non-structural elements on structural system-Analysis of non-structural elements- Prevention of non-structural damage- Isolation of non-structures. Ductility Considerations in Earthquake Resistant Design of RC Buildings: Introduction- Impact of Ductility- Requirements for Ductility-Assessment of Ductility-Factors affecting Ductility- Ductile detailing considerations as per IS 13920. Behaviour of beams, columns and joints in RC buildings during earthquakes-Vulnerability of open ground storey and short columns during earthquakes.

Course Outcomes:

After completion of this course, students should be able to

CO1: Discuss and explain causes of earthquake, Theory of vibration
CO2: Discuss and explain the load path, ductility and earthquake design requirements
CO3: Analyze and design of earthquake resistant RC structures
CO4: Anaalye and design of earthquake resistant masonry structures
CO5: Discuss the design methodology of structural and non-structural elements

Text Books:

1. Earthquake Resistant Design of structures – S. K. Duggal, Oxford University Press
2. Earthquake Resistant Design of structures – Pankaj Agarwal and Manish Shrikhande, Prentice Hall of India Pvt. Ltd.

References:

1. Seismic Design of Reinforced Concrete and Masonry Building – T. Paulay and M.J.N. Priestly, John Wiley & Sons.
2. Eartquake Resistant Design of Buildling structures by Vinod Hosur, Wiley India Pvt. Ltd.
3. Masonry and Timber structures including earthquake Resistant Design –Anand S.Arya, Nem Chand & Bros
4. Earthquake Tips – Learning Earthquake Design and Construction - C.V.R. Murthy

Reference Codes:

1. IS: 1893 (Part-1) -2002. "Criteria for Earthquake Resistant – Design of structures." B.I.S., New Delhi.
2. IS:4326-1993, " Earthquake Resistant Design and Construction of Building", Code of Practice B.I.S., New Delhi.
3. IS:13920-1993, " Ductile detailing of concrete structures subjected to seismic force" – Guidelines, B.I.S., New Delhi

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE47) REINFORCED EARTH AND GEOTEXTILES

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Prerequisites: Geotechnical Engineering

SYLLABUS CONTENT:

Unit-I
Introduction –history, ancient and modern structures- Types of Geosynthetics, advantages, disadvantages. Functions of Geosynthetics and application areas where these functions are

Unit-II
Raw materials used for Geosynthetics, manufacturing process of woven and non wovenGeotextiles, Geomembranes, Geogrids. Properties of Geosynthetics. Creep and long term performance.
Reinforced soil - Advantages and disadvantages. Fills, Types of facings, Factors affecting the performance of reinforced soil.

Unit-III
Mechanism of reinforcement action - Equivalent Confining Stress Concept, Pseudo Cohesion Concept, Concept of Expanding soil mass. – Simple problems.

Unit-IV
Design and analysis of vertically faced reinforced soil retaining walls- External stability and Internal stability – Tie back wedge analysis and coherent gravity analysis. Assumptions, limitations and numerical problems. Construction methods of reinforced retaining walls.
Geosynthetics in pavements, function and benefits.

Unit-V
Bearing capacity improvement using soil reinforcement – Binquet and Lee's analysis – Assumptions, failure mechanisms. Simple problems in bearing capacity.
Geosynthetics for short term stability of embankments on soft soils.
Natural geotextiles, Advantages and disadvantages, functions, erosion control- types of erosion control products, installation methods.

COURSE OUTCOMES:
The students will be able to
CO1: Understand the history and mechanism of reinforced soil
CO2: Become aware about situations where geosynthetics can be used.
CO3: Know about various types of geosynthetics and their functions
CO4: Be able to do dimple design of reinforced soil retaining walls and reinforced earth beds.
CO5: Able to apply different types of analysis in simple problems.

Text Books / References:

1.Jones, C.J.F.P. (1985). Earth reinforcement and soil structures. Butterworth, London.
2.Koerner, R.M. (1999). Designing with Geosynthetics, Prentice Hall, New Jersey, USA, 4th edition.
3.Rao, G.V. (2007). Geosynthetics – An Introduction. Sai Master Geoenvironmental Services Pvt. Ltd., Hyderabad
4.Rao, G.V., Kumar, S. J. and Raju, G.V.S.S. (Eds.). Earth Reinforcement – Design and Construction. Publication No. 314, Central Board of Irrigation and Power, New Delhi, 2012.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18MB03) ENTREPRENEUR DEVELOPMENT

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Prerequisites: Nil

SYLLABUS CONTENT:

Unit – I

Nature of Entrepreneurship; Characteristics – Qualities and skills of an Entrepreneur – Functions of entrepreneur – Entrepreneur scenario in India and Abroad. Forms of Entrepreneurship: Small Business – Importance in Indian Economy – Types of ownership – Sole trading – Partnership – Joint stock company and other forms. First – Mover disadvantages, Risk Reduction strategies, Market scope strategy, Imitation strategies and Managing Newness

Unit – II

Aspects of Promotion: Generation of new entry opportunity, SWOT Analysis,Technological Competitiveness, legal regulatory systems, patents and trademarks, Intellectual Property Rights- Project Planning and Feasibility Studies-Major steps in product development. Financial Aspects: Sources of raising Capital, Debt-Equity, Financing by Commercial Banks, Government Grants and Subsidies, Entrepreneurship Promotion Schemes of Department of Industries (DIC), KVIC, SIDBI,NABARD, NSIC, APSFC, IFCI and IDBI. New Financial Instruments.

Unit - III

Introduction to Business Ethics: Necessity for Business Ethics-Need for Ethical guideline –Salient Issues in Ethics and Commerce- Ethics as a Luxury – Earlier attempts at Ethics in Industry – Justification for Ethics – Effect of Migration of National Character – Shadow Economy – Basic Principles in Ethics – Corporate Climate and corporate climate audits – Political Issues – Nature and theory of Ethics – The Naturalistic fallacy - G.E.Moore's Philosophy.

Unit – IV

Understanding Corporate Governance: Corporate Governance- Capitalism at crossroads –Historical perspective of Corporate Governance – Issues of Corporate Governance – Theoretical basis of Corporate Governance – Corporate Governance mechanisms – Indian Model of Governance – Good Corporate Governance – Corporate Governance committees – OECD Principles – Indian Committee and guidelines – The confederation of Indian Industry's initiative. Corporate Governance Models, Corporate Social Responsibility.

Unit – V

Corporate Social Responsibility: System Concept of Business Society – SocialResponsibility – Social Responsibility tools – approaches to Ethics – Corporate Social Accountability - Business in a Social World – Ethics and Social Responsibility – professional ethics – Ethics of practicing company secretaries- Ethical investing.

Course Outcomes:

CO1: Define the nature of entrepreneur and relate the skills and qualities of entrepreneur to types of ownership
CO2: Classify SWOT and summarize the sources of finance
CO3: Apply the ethical guidelines for business
CO4: Identify the shadow economy and political issues
CO5: Assess the issues of corporate governance and Improve the professional ethics.

Text Books:

1. Robert D Hisrich, Michael P Peters, Dean A Shepherd: Entrepreneurship, TMH, 2009
2. Vasanth Desai: Entrepreneurship, HPH, 2009
3. C.S.V.Murthy: Business Ethics & Corporate Governance, Himalaya, 2009.

References:

1. Bholanath Dutta: Entrepreneurship Text and Cases, Excel, 2009
2. David Martin: Corporate Governance, Viva, 2009
3. H. Nandan: Fundamentals of Entrepreneurship, PHI, 2009.
4. Barringer: Entrepreneurship, Pearson,2009.
5. Ronald D Francis & Mukti Mishra: Business Ethics, TMH, 2009
6. RK Mishra,Gitarani: Corporate Governance, Excel,2009
7. A.C.Frenando: Corporate Governance, Pearson, 2006
8. V.Balachandran & V.Chandrasekaran: Corporate Governance & Social Responsibility, PHI, 2009
9. A.C.Fernando: Business Ethics, Pearson, 2009
10. Laura P Hartman & Abha Chatterjee: Business Ethics, TMH, 2009
11. Tripat Kaur: Values and Ethics in Management, 2/e, Paragon International,2009

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18MB05) INDUSTRIAL MANAGEMENT

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Prerequisites: Nil

SYLLABUS CONTENT:

UNIT I
Introduction to Management: Entrepreneurship and organization – Nature and Importance of Management, Functions of Management, Taylor's Scientific Management Theory, Fayol's Principles of Management, Maslow's Theory of Human Needs, Douglas McGregor's Theory X and Theory Y, Herzberg's Two-Factor Theory of Motivation, Systems Approach to Management, Leadership Styles, Social responsibilities of Management

UNIT II
Designing Organizational Structures: Departmentalization and Decentralization, Types of Organization structures – Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organization, Cellular Organization, team structure, boundary less organization, inverted pyramid structure, lean and flat organization structure and their merits, demerits and suitability.

UNIT III
Operations Management: Objectives- product design process- Process selection-Types of production system(Job, batch and Mass Production),Plant location-factors- Urban-Rural sites comparison- Types of Plant Layouts- Design of product layout- Line balancing(RPW method) Value analysis-Definition-types of values- Objectives- Phases of value analysis- Fast diagram

UNIT IV:
Work Study: Introduction — definition — objectives — steps in work study — Method study — definition — objectives — steps of method study. Work Measurement — purpose — types of study — stop watch methods — steps — key rating — allowances — standard time calculations — work sampling. Statistical Quality Control: variables-attributes, Shewart control charts for variables- chart, R chart, – Attributes-Defective-Defect- Charts for attributes-p-chart -c chart (simple Problems), and Acceptance Sampling- Single sampling- Double sampling plans-OC curves.

UNIT V
Job Evaluation : methods of job evaluation — simple routing objective systems — classification method — factor comparison method — point method — benefits of job evaluation and limitations. Project Management (PERTICPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (simple problems)

Course Outcomes:

CO1: Define Entrepreneurship and Organization.
CO2: Design Organizational structures and its uses.
CO3: Estimate the cost and time for projects with the help of PERT and CPM.
CO4: Explain the work and make use of work study techniques
CO5: Solve the various problems in operation management

TEXT BOOKS

1. Industrial Engineering and Management/O.P. Khanna/Khanna Publishers.
2. Industrial Engineering and Management Science/T.R. Banga and S.C.Sarma/Khanna Publishers.

REFERENCE BOOKS

1. Motion and Time Study by Ralph M Barnes! John Willey & SonsWork Study by ILO.
2. Human factors in Engineering & Design/Ernest J McCormick / TMH.
3. Production & Operation Management /Paneer Selvam /PHI.
4. Industrial Engineering Management/NVS Raju/Cengage Learning.
5. Industrial Engineering Hand Book /Maynard.
6. Industrial Engineering Management I RaviShankar/ Galgotia.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18EC24) DIGITAL IMAGE PROCESSING

B. Tech–VII Sem.

L	T	P	C
3	0	0	3

Prerequisites: Nil

SYLLABUS CONTENT

UNIT- I

Digital Image Fundamentals & Image Transforms: Digital Image Fundamentals, Sampling and Quantization, Relationship between Pixels,

Image Transforms: 2-D FFT, Properties, Walsh Transform, Hadamard Transform, Discrete Cosine Transform, Haar Transform, Slant Transform, Hotelling Transform.

UNIT –II

Image Enhancement (Spatial Domain): Introduction, Image Enhancement in Spatial Domain, Enhancement Through Point Operation, Types of Point Operation, Histogram Manipulation, Linear and Non — Linear Gray Level Transformation, Local or Neighborhood Operation, Median Filter, Spatial Domain High-Pass Filtering.

Image Enhancement (Frequency Domain): Filtering in Frequency Domain, Obtaining Frequency Domain Filters from Spatial Filters, Generating Filters Directly in the Frequency Domain, Low Pass (Smoothing) and High Pass (Sharpening) Filters in Frequency Domain.

UNIT –III

Image Restoration: Degradation Model, Algebraic Approach to Restoration, Inverse Filtering, Least Mean Square Filters, Constrained Least Squares Restoration, Interactive Restoration.

UNIT-IV

Image Segmentation: Detection of Discontinuities, Edge Linking And Boundary Detection, Thresholding, Region Oriented Segmentation.

Morphological Image Processing: Dilation and Erosion: Dilation, Structuring Element Decomposition, Erosion, Combining Dilation and Erosion, Opening and Closing, The Hit or Miss Transformation.

UNIT-V

Image Compression: Redundancies and their Removal Methods, Fidelity Criteria, Image Compression Models, Huffman and Arithmetic Coding, Error Free Compression, Lossy Compression, Lossy and Lossless Predictive Coding, Transform Based Compression, JPEG 2000 Standards.

Course Outcomes

CO1: Gain the knowledge of digital image fundamentals and image transforms.
CO2: Discuss the analysis of image enhancement in spatial and frequency domain.
CO3: Understand the different methods to restore an image.
CO4: Inspect different image segmentation techniques and understand morphological image processing.
CO5: Analyze the different image compression techniques.

Text Books

1. Digital Image Processing – Rafael C. Gonzalez, Richard E. Woods, 3rd Edition, Pearson, 2008
2. Digital Image Processing- S Jayaraman, S Esakkirajan, T Veerakumar- TMH, 2010.

Reference Books

1. Digital Image Processing and Analysis-Human and Computer Vision Application with using CVIP Tools – Scotte Umbaugh, 2nd Ed, CRC Press, 2011
2. Digital Image Processing using MATLAB — Rafael C. Gonzalez, Richard E Woods and Steven L. Eddings, 2nd Edition, TMH, 2010.
3. Fundamentals of Digital Image Processing — A.K.Jain, PHI, 1989
4. Digital Image Processing and Computer Vision — Somka, Hlavac, Boyle-Cengage Learning (Indian edition) 2008.
5. Introductory Computer Vision Imaging Techniques and Solutions- Adrian low, 2008, 2nd Edition
6. Introduction to Image Processing & Analysis — John C. Russ, J. Christian Russ, CRC Press, 2010.
7. Digital Image Processing with MATLAB & Labview — Vipula Singh, Elsevie r.

*****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE28) ENVIRONMENTAL ENGINEERING LAB

B. Tech–VII Sem.

L	T	P	C
0	0	2	1

Pre Requisites: Nil

LIST OF EXPERIMENTS

1. Determination of pH
2. Determination of Turbidity
3. Determination of Conductivity
4. Determination of Acidity.
5. Determination of iron.
6. Determination of Dissolved Oxygen.
7. Determination of Nitrates.
8. Determination of Chlorine demand
9. Determination of total Phosphorous.
10. Determination of B.O.D
11. Determination of C.O.D

COURSE OUTCOMES

After completion of this course, students should be able to

CO1: Test water and wastewater samples to determine p^H and conductivity

CO2: Determine BOD and COD of water

CO3: Determine chloride content in water

CO4: Estimate quality of water and wastewater.

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE48) PAVEMENT DESIGN

B. Tech–VIII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Highway Engineering

SYLLABUS CONTENT:

UNIT – I

Factors Affecting Pavement Design: Variables Considered in Pavement Design, Types of Pavements, Functions of Individual Layers, Classification of Axle Types of Rigid Chassis and Articulated Commercial Vehicles, Legal Axle and Gross Weights on Single and Multiple Units, Tire Pressure, Contact Pressure, EAL and ESWL Concepts, Traffic Analysis: ADT, AADT, Truck Factor, Growth Factor, Lane, Directional Distributions & Vehicle Damage Factors, Effect of Transient & Moving Loads.

UNIT – II

Stresses In Pavements: Vehicle-Pavement Interaction: Transient, Random & Damping Vibrations, Steady State of Vibration, Experiments on Vibration, Stress Inducing Factors in Flexible and Rigid pavements. **Stresses In Flexible Pavements**: Visco-Elastic Theory and Assumptions, Layered Systems Concepts, Stress Solutions for One, Two and Three Layered Systems, Fundamental Design Concepts.**Stresses In Rigid Pavements**: Westergaard's Theory and Assumptions, Stresses due to Curling, Stresses and Deflections due to Loading, Frictional Stresses, Stresses in Dowel Bars & Tie Bars

UNIT – III

Material Characteristics: CBR and Modulus of Subgrade Reaction of Soil, Mineral aggregates – Blending of aggregates, binders, polymer and rubber modified bitumen, Resilient, Diametral Resilient and Complex (Dynamic) Moduli of Bituminous Mixes, Permanent Deformation Parameters and other Properties, Effects and Methods of Stabilisation and Use of Geo Synthetics.

UNIT - IV

Design Of Flexible Pavements: Flexible Pavement Design Concepts, Asphalt Institute's Methods with HMA and other Base Combinations, AASHTO, IRC Methods

Design Of Rigid Pavements: Calibrated Mechanistic Design Process, PCA, AASHTO & IRC Specifications, Introduction to Prestressed and Continuously Reinforced Cement Concrete Pavement Design.

UNIT – V

Design of Pavement for Low Volume Roads: Pavement design for low volume roads, Rural road designs – code of practice.

Design of Overlays: Types of Overlays, Suitability, Design of overlays.

Course Outcomes:

After completion of this course, students should be able to

CO1: Contrast the factors effecting the pavements.
CO2: Expose to the analysis concepts and procedures for stresses, strains and deflection in pavements
CO3: Understand the concept of soil modification and its suitability as ground improvement method.
CO4: Obtain the knowledge of design of flexible and rigid pavements by different methods
CO5: Illustrate the design of pavement for low volume roads and overlays

Text Books:

1. Concrete Pavements, AF Stock, Elsevier, Applied Science Publishers
2. Pavement Analysis & Design, Yang H. Huang, Prentice Hall Inc

References:

1.Design of Functional Pavements, Nai C. Yang, McGraw Hill Publications
2.Principles of Pavement Design, Yoder.J. &Witzorac Mathew, W. John Wiley & Sons Inc
3.Pavement and Surfacings for Highway & Airports, Micheal Sargious, Applied Science Publishers Limited.
4.IRC Codes for Flexible and Rigid Pavements design

***

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE49) SOLID WASTE MANAGEMENT

B. Tech–VIII Sem. **L T P C**

Pre Requisites: Nil **3 0 0 3**

SYLLABUS CONTENT:

UNIT – I Introduction

Solid Waste problem, Meaning and definition of solid waste, concept and classification of municipal solid waste, Impacts of solid waste on environment, Solid waste management rules and regulations.

UNIT – II

Collection and Transfer of Municipal Solid Waste

Developing a solid waste collection and transfer system characterizing waste generation, determining public and private collection/transfer options.

UNIT – III

Solid Waste management techniques

Solid waste management Hierarchy, waste avoidance /waste prevention, Definition of source Reduction, waste reduction at source using 5R's Technique.

UNIT – IV

Waste Disposal Techniques

Introduction, composting, principles of composting, factors affecting composting, vermi composting, waste to energy techniques, Landfill technique, and design and operating procedure of landfill.

UNIT – V

Solid waste management of Biomedical Waste, plastic and E- Waste

Biomedical Waste – Sources and generation, biomedical waste management. Plastic– Dangers of plastic wastes, Recycling and disposal of plastic wastes. E-Wastes – Definition, Health hazards, E-Waste management and conclusion.

COURSE OUTCOMES:

After completion of this course, students should be able to

CO1: Acquire the knowledge of solid waste management
CO2: Explain solid waste disposal techniques
CO3: Acquire the knowledge of Biomedical waste disposal techniques
CO4: Select the appropriate method for solid waste collection, transportation, redistribution and disposal
CO5: Acquire the knowledge of e- waste disposal techniques

TEXT BOOKS

1.Solid waste management by K. Sasi Kumar & S. Gopi Krishna
2.Integrated Solid Waste Management, Tchobanoglous, Theissen & Vigil. McGraw Hill Publication

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18CE50) FINITE ELEMENT METHOD

B. Tech–VIII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Structural Analysis – II

SYLLABUS CONTENT

UNIT I
Introduction: Concepts of FEM - steps involved - merits and demerits - energy principles – discrimination - Raleigh - Ritz method of functional approximation.
Principles of Elasticity: Stress equations - strain displacement relationships in matrix form plane stress, plane strain and axi-symmetric bodies of revolution with axi-symmetric loading.

UNIT II
One dimensional FEM: Stiffness matrix for beam and bar elements - shape functions for ID elements.

UNIT III
Two dimensional FEM: Different types of elements for plane stress and plane strain analysis - displacement models - generalized coordinates - shape functions - convergent and compatibility requirements - geometric invariance - natural coordinate system - area and volume coordinates - generation of element stiffness and nodal load matrices

UNIT IV
Isoparametric formulation: Concept - different isoparametric elements for 2D analysis - formulation of 4-noded and 8-noded isoparametric quadrilateral elements - Lagrange elements - serendipity elements.

UNIT V
Axi Symmetric Analysis: bodies of revolution - axi symmetric modeling - strain displacement relationship - formulation of axi symmetric elements. Three dimensional FEM: Different 3-D elements-strain-displacement relationship – formulation of hexahedral and isoparametric solid element.

Course Outcomes:
CO1: Introduction to finite element method and define stress strain equation
CO2: Derive equations in finite element methods for 1Dand 2Dproblems.
CO3: Formulate and solve basic problems in structural mechanics using different elements.
CO4: Identify and formulate mathematical models for solution of simple and common engineering problems into finite element.
CO5: Appreciate the importance of ethical issues pertaining to the effective utilization of FEA.

TEXT BOOK:

1. A first course in Finite Element Method by Daryl L. Logan, 5th Edition, Cengage Learning India Pvt. Ltd.
2. Introduction to Finite Elements in Engineering by Tirupathi R. Chandrupatla, and Ashok D. Belegundu, Prentice Hall of India

REFERENCES:

1. Finite Element Aanalysis by P.Seshu, PHI Learning Private Limited
2. Concepts and applications of Finite Element Analysis by Robert D. Cook David S. Malkus, Michael E. Plesha, Robert J. Witt, Wiley India Pvt. Ltd.
3. Applied Finite Element Analysis by G.Ramamurty, I.K.International Publishing House Pvt. Ltd.

****

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(B18MB06) INTELLECTUAL PROPERTY RIGHTS

B. Tech–VIII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT – I

INTRODUCTION TO INTELLECTUAL PROPERTY: Introduction, types of intellectual property,International organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II

TRADE MARKS: Purpose and function of trademarks, acquisition of trade mark rights, protectable matter,selecting and evaluating trade mark, trade marks registration processes.

UNIT – III

LAW OF COPY RIGHTS: Fundamental of copy right law, originally of material, rights of reproduction,rights of perform the work publicity, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

LAW OF PATENTS: Foundation of patent law, patent searching process ownership rights and transfer.

UNIT- IV

TRADE SECRETS: Trade secrete law, determination of trade secrete status, liability for misappropriations oftrade secrets, protection for submission trade secrete litigation.

UNIT-V

NEW DEVELOPMENT OF INTELLECTUAL PROPERTY: New developments in trade mark law: Copyright law, patent law, intellectual property audits.

COURSE OUTCOMES:

CO1: Outline the increasing importance of intellectual property rights
CO2: Utilize post registration procedures and trade mark registration process
CO3: Explain the copyright principles and rights
CO4: Prioritize the law of patents and patent ownership.
CO5: Develop the trade secret and maintenance.

TEXT BOOOKS & REFERENCES:

1. Intellectual property rights, Deborah, E. Bouchux, cengage learing
2. Intellectual property right – Unleashing the knowledge economy, prabuddha ganguli, Tate Mc Graw Hill Publishing company ltd.,

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18ME25) NANOTECHNOLOGY

B. Tech–VIII Sem.

L	T	P	C
3	0	0	3

Pre Requisites: Nil

SYLLABUS CONTENT:

UNIT-1:

Introduction to Nanotechnology: Importance of nanoscale, Nanostructure types, electronic, magnetic, optical Properties of Nanomaterials, top-down and bottom – up approach to nanostructures.

Quantum Mechanical phenomenon in Nanostructures: Quantum confinement of electrons in semi conductor Nano structures, one dimensional confinement (Quantum Wires), two dimensional confinements (Quantum Wells), three dimensional confinements (Quantum dots).

UNIT-II:

Carbon Nano Structures: Carbon Nanotubes (CNTs), Fullerenes, C60, C80 and C240 Nanostructures, properties (mechanical, optical and electrical) and applications.

UNIT-III:

Fabrication of Nanomaterials: Physical Methods: Inert gas condensation, Arc discharge, RF plasma, plasma arc technique, Ion sputtering, Laser ablation, Laser pyrolysis, Molecular beam eqitaxy, Chemical vapour deposition method.

Nano Scale characterization techniques: Scanning probe techniques (AFM, MFM, STM, SEM, TEM), XRD.

UNIT-IV:

Nanodevices and Nanomedicine: Lab on chip for bioanalysis, Core/shell Nanoparticles in drug delivery systems (site specific and targeted drug delivery), cancer treatment, and bone tissue treatment.

Nano and molecular electronics: Resonant-Tunneling Structures, single electron tunneling, Single Electron transistors, coulomb blockade, glant magneto resistance, tunneling magneto resistance.

UNIT-V:

Nanolithography and Nanomanipulation: e-beam lithography and SEM based Nanolithography and Nanomanipulation, Ion beam lithography, oxidation and metallization Mask and its application. Deep UV lithography, x-ray based lithography.

COURSE OUTCOMES:

The students will be able to

CO1: Understand the fundamentals of Nanotechnology

CO2: Analyze the different classes of nano materials

CO3: Differentiate techniques involved in Nanotechnology

CO4: Compare nanotechnology potentialities.

CO5: Estimate oxidation and metallization Mask and its application

TEXT BOOKS:

1.Charies.P.pode, introduction to nanotechnology, springer publications.
2.Springer Handbook of Nanotechnology-Bharat Bhusan.
3.Phani Kumar, principles of nanotechnology, scitech publications.

REFERENCES BOOKS:

1.David Ferry "Transport in Nano structures" Cambridge University press 2000.
2.Nanobiotechnology; ed, C.M.Niemeyer, C.A. Mirkin.
3.Nanofabrication towards biomedical application: Techniques, tools, Application and impact-Ed. Challa S., S.R.Kumar, J.H.Carola.
4.Encyclopedia of Nanotechnology-Hari Singh Nalwa
5.Carbon Nanotubes: Properties and Applications- Michael J.O'Connell.
6.S.Dutta "Electron Transport in Mesoscopic systems" Cambridge University press.
7.H.Grabert and M.Devoret "Single charge Tunneling" Plenum press 1992.

***

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(B18ME42) NON-CONVENTIONAL ENERGY SOURCES

B. Tech–VIII Sem.	L	T	P	C
Pre Requisites: Nil	3	0	0	3

SYLLABUS CONTENT:

UNIT-I – I

PRINCIPLES OF SOLAR RADIATION: Role and potential of new and renewable source, the solar energy option, Environmental impact of solar power, physics of the sun, the solar constant, extraterrestrial and terrestrial solar radiation, solar radiation on titled surface, instruments for measuring solar radiation and sun shine, solar radiation data.

UNIT-II

SOLAR ENERGY COLLECTION: Flat plate and concentrating collectors, classification of concentrating collectors, orientation and thermal analysis, advanced collectors.

SOLAR ENERGY STORAGE AND APPLICATIONS: Different methods, Sensible, latent heat and stratified storage, solar ponds. Solar Applications- solar heating/cooling technique, solar distillation and drying, photovoltaic energy conversion.

UNIT-III

WIND ENERGY: Sources and potentials, horizontal and vertical axis windmills, performance characteristics, Betz criteria.

BIO-MASS: Principles of Bio-Conversion, Anaerobic/aerobic digestion, types of Biogas digesters, gas yield, combustion characteristics of bio-gas, utilization for cooking, I.C. Engine operation and economic aspects.

UNIT-IV

GEOTHERMAL ENERGY: Resources, types of wells, methods of harnessing the energy, Potential in India.

OCEAN ENERGY: OTEC, Principles utilization, setting of OTEC plants, thermodynamic cycles. Tidal and wave energy: Potential and conversion techniques, mini-hydel power plants, and their economics.

UNIT-V

DIRECT ENERGY CONVERSION: Need for DEC, Carnot cycle, limitations and principles of DEC. Thermoelectric generators, see beck, pettier and joule Thomson effects, Figure of merit, materials, applications, MHD generators, principles, dissociation and ionization, hall effect, magnetic flux, MHD accelerator, MHD Engine, power generation systems, electron gas dynamic conversion, economic aspects. Fuel cells, principles, faraday's law's, thermodynamic aspects, selection of fuels and operating conditions.

COURSE OUTCOMES:

At the end of the course, the student will be able to

CO1: Apply the technology to capture the energy from the renewable sources like sun, Wind, ocean, biomass, geothermal.

CO2: Compare different renewable energy sources to produce electrical power minimize the use of conventional energy sources to produce electrical energy.

CO3: Identify the fact that the conventional energy resources are depleted.

CO4: Understand direct energy conversion.

CO5: Differentiate limitations and principles of direct energy conversion.

TEXT BOOKS:

1.Non-Conventional Energy Sources /G.D. Rai

2.Renewable Energy Technologies /Ramesh & Kumar /Narosa

REFERENCE BOOKS:

1.Renewable energy resources/ Tiwari and Ghosal/ Narosa.

2.Non-Conventional Energy / Ashok V Desai /Wiley Eastern.

3.Non-Conventional Energy Systems / K Mittal /Wheeler

4.Solar Energy /Sukhame

****