



Chhattisgarh Swami Vivekanand Technical University (CSVTU), Bhilai (CG)

SCHEME OF TEACHING AND EXAMINATION

Courses of Study and Scheme of Examination of Q1 Group B Tech (Second Semester - Common to all Branches of Engineering) 2019-20

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Period per Week			Scheme of Examination			Total Marks	Credit
				L	T	P	Theory/Lab				
							ESE	CT	TA		
1.	Basic Sciences	Chemistry-I	A000211(011)	3	1	-	100	20	30	150	4
2.	Basic Sciences	Mathematics-II**	A000212(014)	3	1	-	100	20	30	150	4
3.	Computer Science	Programming for Problem Solving	A000213(022)	3	-	-	100	20	30	150	3
4.	Humanities	English	A000214(046)	2	-	-	100	20	30	150	2
5.	Civil Engineering	Basic Civil Engineering and Mechanics	A000215(020)	3	-	-	100	20	30	150	3
6.	Basic Sciences	Chemistry (Lab)	A000221(011)	-	-	2	40	-	20	60	1
7.	Computer Science	Programming for Problem Solving (Lab)	A000222(022)	-	-	4	40	-	20	60	2
8.	Civil Engineering	Basic Civil Engg. & Mechanics (Lab)	A000223(020)	-	-	2	40	-	20	60	1
9.	Mechanical Engineering	Workshop Practice/ Manufacturing Process (Lab)	A000224(037)	-	1	4	40	-	20	60	3
10.	Humanities	Language (Lab)	A000225(046)	-	-	2	-	-	10	10	1
Total Marks				14	3	14	660	100	240	1000	24

L-Lecture, T-Tutorial, P-Practical, ESE-End Semester Exam, CT- Class Test, TA-Teacher's Assessment

Note :

- (a) The teaching in the 1st and 2nd Semester will be divided in two groups consisting of various branches as shown below :

P1-GROUP : Electronics & Telecommunication, Mechanical, Civil, Mining, Applied Electronics & Instrumentation, Metallurgy, Mechatronics, Automobile, Production Engineering, Fashion and Apparel Engineering

Q1-GROUP : Computer Science, Information Technology, Electronics & Instrumentation, Electrical, Chemical, Electrical & Electronics, Plastic Engineering, Agriculture Engineering, Biotechnology

- (b) **Mathematics-II will be taught to both the groups in the second semester.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Semester: B.Tech – 2nd

Subject: Chemistry-I

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 02

Branch: Common to all Branches

Course Code: A000211(011)

L: 3 T: 1 P: 0 Credits: 4

Unit I – V is common for all branches except Chemical Engineering

Unit VI – X are specific to Chemical Engineering

Unit – I

Atomic & molecular structure

10 hours

Molecular orbital Theory: Equations for atomic and molecular orbitals (LCAO), Energy level diagram of homo (H_2, N_2, O_2, Li_2, F_2) & heteromolecules (CO, NO, HF), Concept of bond order. Pi-molecular orbitals of butadiene, benzene and aromaticity.

Crystal Field Theory: Splitting of d-orbital of octahedral and tetrahedral complexes, Energy level diagram of transition metal ion & magnetic property, numerical based on Crystal field stabilization energy.

Unit – II

Spectroscopic techniques and applications

10 hours

Principle of spectroscopy. Electromagnetic radiation, Spectrophotometer (line diagram)

Electronic Spectroscopy (Ultraviolet-visible spectroscopy): Theory, Types of electronic transition, Chromophore, auxochromes, Electronic excitation in conjugated dienes, Absorption Laws, applications on quantitative analysis, Simple numerical based on absorption laws and uses or application of Electronic Spectroscopy

Vibrational spectroscopy (Infrared spectroscopy): Molecular vibration, Selection rule, functional group region, fingerprint region and uses or application of Vibrational spectroscopy.

Nuclear magnetic resonance spectroscopy: Introduction, number of signal, chemical shift, Spin-spin coupling and uses or application of Nuclear magnetic resonance spectroscopy.

Unit – III

8 hours

Use of free energy in Chemical Equilibria

Thermodynamic Functions: Energy, Entropy, Free energy, Cell potential & related numericals, Estimation of entropy and free energies, Nernst Equation & its application to voltaic cell, Relation of free energy with EMF.

Corrosion: Electrochemical theory of corrosion, galvanic series, Galvanic corrosion, Differential aeration corrosion, Pitting, and Water line corrosion, Caustic embrittlement, factors affecting corrosion, Cathodic Protection.

Unit – IV

Periodic properties

8 hours

Periodic table, atomic and ionic radii, ionisation energies, electron affinity, electronegativity.

Effective nuclear charge, penetration of orbitals, variations of s, p, d and f orbital energies of atoms. Polarizability, Oxidation states, coordination numbers and geometries, Hard, soft acids and bases (Classification, Pearson's HSAB principle, its applications & limitations) Molecular Geometry (Valence shell electron pair repulsion theory to $NH_3, H_3O^+, SF_4, ClF_3, ICl_2$ and H_2O), Numerical based on effective nuclear charge.

Unit -V**8 hours****Organic reactions and synthesis of drug molecule**

Introduction to reactions involving substitution (free radical-Chlorination of molecule, Gomberg reaction, Wurtz reaction, Electrophilic, Nucliphilic-SN¹ SN²), Addition (Electrophilic-Morkownihoff rule, Nucliphilic) Elimination (α elimination , β elimination , unimolecular E₁, bimolecular E₂), oxidation (Baeyer villiger oxidation), reduction (Clemmensen reduction, Wolff-Kishner reduction) cyclization (Bergman Cyclization) and ring openings and rearrangement reaction (Beckmann, Reimer-Tiemann reaction, Cannizzaro, crossed cannizzaro reaction)

Synthesis of a commonly used drug molecule: General guidelines of drug making, synthesis of Aspirin, Ibuprofen, Paracetamol.

Unit -VI**Introduction to quantum theory****8 hours**

Schrodinger equation & its importance, Applications to hydrogen atom, Wave mechanical model for many electron atoms-radial distribution curves.

Unit -VII**10 hours****Chemical bonding in molecules:**

MO theory, Structure, bonding and energy levels of bonding and shapes of many atom molecules, Coordination Chemistry, Electronic spectra and magnetic properties of complexes with relevance to bio-inorganic chemistry, organometallic chemistry.

Unit -VIII**8 hours****Stereochemistry:**

Introduction to Stereochemistry: Representations of 3 dimensional structures, Chirality, Optical activity. Isomerism- structural isomerism, stereoisomers, enantiomers, diastereomers, Configurations (D, L & R, S), Geometrical isomerism (cis and trans & E and Z). Racemic modification & their resolution, Isomerism in transitional metal compounds.

Conformational analysis: Conformations of cyclic (cyclohexane) and acyclic compounds (ethane & butane).

Unit -IX**Reactivity of organic molecules:****8 hours**

Organic acids and bases: factors influencing acidity, basicity, and nucleophilicity of molecules, kinetic vs. thermodynamic control of reactions.

Unit -X**10 hours****Strategies for synthesis of organic compounds:**

Reactive intermediates substitution, elimination, rearrangement, kinetic and thermodynamic aspects, role of solvents.

Course Outcomes:

The concepts developed in this course will aid in the quantification of several concepts in chemistry that have been introduced at the 10+2 levels in schools. Technology is being increasingly based on the electronic, atomic and molecular level modifications. Quantum theory is more than 100 years old and to understand phenomena at nanometer levels, one has to base the description of all chemical processes at molecular levels. The course will enable the student to:

- Analyse microscopic chemistry in terms of atomic and molecular orbital's and intermolecular forces.
- Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.
- Rationalise bulk properties and processes using thermodynamic considerations.
- Rationalise periodic properties such as ionisation potential, electro negativity, Oxidation states.
- List major to significant chemical reactions that are used in the synthesis of molecules.
- Use the knowledge of quantum theory in various chemical systems.
- Appreciate aliphatic chemistry and stereochemistry
- Write simple mechanisms

Text Books:

1. A. Text Book of Engg. Chemistry, Shashi Chawala, Dhanpat Rai & Co. (P) Ltd.
2. Engineering Chemistry by P. C. Jain (Dhanpat Rai Publishing Company).
3. Engineering Chemistry, Concept in Engineering Chemistry by Satyaprakash and Manisha Agrawal by Khanna Publication.

Books for Chemical Engineering:

1. Advanced Inorganic Chemistry Vol 1 & II by Gurdeep Raj, Goel Publishing House.
2. Organic Reaction and Their Mechanism P. S. Kalsi, New Age International Publishers.

Reference Books:

1. University Chemistry, by B. H. Mahan
2. Chemistry: Principles and Applications, by M. J. Sienko and A. Plane
3. Fundamentals of Molecular Spectroscopy, by C. N. Banwell
4. Engineering Chemistry (NPTEL Web-book), by B. L. Tembe, Kamaluddin and M. S. Krishnan
5. Physical Chemistry, by P. W. Atkins
6. Organic Chemistry: Structure and Function by K. P. C. Volhardt and N. E. Schore, 5th Edition
7. Essentials of Physical Chemistry, Bahi & Tuli, S. Chand Publishing
8. Introduction to Nanoscience by S. M. Lindsay

Chhattisgarh Swami Vivekananda Technical University, Bilai

Semester: B.Tech – 2nd

Subject: Mathematics - II

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 02

Branch: Common to all Branches

Course Code: A000212(014)

L: 3 T: 1 P: 0 Credits 4

Course Objective:

The objective of this course is to familiarize the prospective engineers with techniques in multivariate integration, ordinary and partial differential equations and complex variables. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines. More precisely, the objectives are:

- To acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage.
- To introduce effective mathematical tools for the solutions of differential equations that model physical processes.
- To introduce the tools of differentiation and integration of functions of complex variable that are used in various techniques dealing engineering problems.

UNIT I

Multivariable Calculus (Integration)

(8 hours)

Double and triple integrals (Cartesian), change of order of integration in double integrals, Change of variables (Cartesian to polar), Applications: areas and volumes, Center of mass and Gravity (constant and variable densities); Triple integrals (Cartesian),

Orthogonal curvilinear coordinates, Simple applications involving cubes, sphere and rectangular parallelepipeds; Scalar line integrals, vector line integrals, scalar surface integrals, vector surface integrals, Theorems of Green, Gauss and Stokes (without proof) & its applications.

UNIT II

First order ordinary differential equations

(8 hours)

Exact, linear and Bernoulli's equations, Euler's equations, Equations of first order and higher degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

UNIT III

Ordinary differential equations of higher orders

(8 hours)

Higher order linear differential equations with constant coefficients & variable coefficients, method of variation of parameters, Cauchy-Euler equation.

Power series solutions; Legendre polynomials and their properties, Bessel functions of the first kind and their properties.

UNIT IV

Complex Variable – Differentiation

(8 hours)

Differentiation, Cauchy-Riemann equations, analytic functions, harmonic functions, finding harmonic conjugate; elementary analytic functions (exponential, trigonometric, logarithm) and their properties; Conformal mappings, Mobius transformations and their properties.

UNIT V

Complex Variable – Integration

(8 hours)

Contour integrals, Cauchy-Goursat theorem (without proof), Cauchy Integral formula (without proof), Liouville's theorem and Maximum-Modulus theorem (without proof); Taylor's series, zeros of analytic functions, singularities, Laurent's series. Residues, Cauchy Residue theorem (without proof), Evaluation of definite integral involving sine and cosine, Evaluation of certain improper integrals using the Bromwich contour.

Textbooks/References:

1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006
3. W. E. Boyce and R. C. DiPrima, Elementary Differential Equations and Boundary Value Problems, 9th Edn., Wiley India, 2009.
4. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.
5. E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall India, 1995.
6. E. L. Ince, Ordinary Differential Equations, Dover Publications, 1958.
7. J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Ed., Mc-Graw Hill, 2004.
8. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
9. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Semester: B.Tech – 2nd

Subject: Programming for Problem Solving

Total Marks in End Semester Exam: 100

Minimum number of Class tests: 02

Branch: Common to all Branches

Course Code: A000213(022)

L: 3 T: 0 P: 0 Credits: 3

Course Objectives:

- To learn the Computer Fundamental concepts
- To aware students about Problem Solving approach
- To make them to use basic components of Programming

Unit I: Introduction

(4 lectures)

Introduction to Programming, Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.), Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart, Pseudo code and Source code with examples.

Unit II: Programming Concepts

(9 lectures)

Variables, data types, memory locations, Syntax and Logical Errors in compilation, object and executable code, Arithmetic expressions and precedence, Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching, Iteration and loops.

Unit III: Arrays

(9 lectures)

Introduction to Arrays (1-D, 2-D), Character arrays and Strings, Basic Algorithms: Searching, Basic Sorting Algorithms (Bubble, Insertion and Selection), Finding roots of equations, notion of order of complexity through example programs (no formal definition required).

Unit IV: Function

(9 lectures)

Definition, prototyping, built in libraries, Parameter passing in functions, call by value, Passing arrays to functions: idea of call by reference, Recursion: Example programs, such as Finding Factorial, Fibonacci series, Ackerman function etc. Quick sort or Merge sort.

Unit V: Structure

(9 lectures)

Defining structures and Array of Structures, Pointers: Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, notion of linked list (no implementation), bit-fields. File handling: concept of a file, text files and binary files, Formatted I/O, file I/O operations, example programs

Course Outcomes:

The student will learn-

- To formulate simple algorithms for arithmetic and logical problems.
- To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
- To use arrays, pointers and structures to formulate algorithms and programs.
- To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.

Text Books:

1. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill.
2. E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill

Reference Books:

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India

Chhattisgarh Swami Vivekananda Technical University, Bilai

Semester: B.Tech – 2nd

Subject: English

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 02

Branch: Common to all Branches

Course Code: A000214(046)

L:2 T:0 P:0 Credits: 2

UNIT – I

Vocabulary Building

- 1.1 Root words from foreign languages and their use in English
- 1.2 Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives.
- 1.3 Synonyms, antonyms, Homonyms and Homophones.
- 1.4 One Word Substitution
- 1.5 Basics of Phonetics: Definitions, Phonetic Symbols, Transcription of one and two syllable words
- 1.6 Communication: Definition, Cycle, Elements, 7Cs & Barriers

UNIT – II

Basic Writing Skills

- 2.1 Types of Sentences and Tenses, Voices and narration
- 2.2 Use of phrases and clauses in sentences
- 2.3 Importance of proper punctuation
- 2.4 Creating coherence
- 2.5 Techniques for writing precisely

UNIT – III

Identifying Common Errors in Writing

- 3.1 Parts of speech, Subject-verb agreement
- 3.2 Noun-pronoun agreement
- 3.3 Misplaced modifiers
- 3.4 Articles
- 3.5 Prepositions
- 3.6 Redundancies
- 3.7 Clichés
- 3.8 Errors in Spelling/ Misspelled words

UNIT – IV

Writing Practices

- 4.1 Comprehension
- 4.2 Précis Writing
- 4.3 Essay Writing
- 4.4 Business Letters & Job Application
- 4.5 Formal Reports: Components & Characteristics
- 4.6 Writing e-mails

UNIT – V

Listening

- 5.1 Listening: Definition, purposes, types, and strategies to improve listening.
- 5.2 Characteristics of effective listening.
- 5.3 Barriers to Listening and measures to overcome barriers
- 5.4 Note making: types and conversion of notes into texts.

UNIT – VI

Oral Communication (This unit involves interactive practice sessions in Language Lab)

- 6.1 Listening Comprehension
- 6.2 Pronunciation, Intonation, Stress and Rhythm
- 6.3 Common Everyday Situations: Conversations and Dialogues
- 6.4 Communication at Workplace
- 6.5 Interviews
- 6.6 Formal Presentations

Course Outcomes:

The student will acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.

Suggested Books:

1. Practical English Usage. Michael Swan. OUP. 1995.
2. Remedial English Grammar. F.T. Wood. Macmillan.2007
3. On Writing Well. William Zinsser. Harper Resource Book. 2001
4. Study Writing. Liz Hamp-Lyons and Ben Heasley. Cambridge University Press. 2006.
5. Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press. 2011.
6. Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press
7. English and Communication Skills for Students of Science and Engineering. S.P. Dhanavel. Orient Blackswan Ltd.2009.
8. Scientific English: A Guide for Scientists and Other Professionals. R A Day. Universities Press. 2000.
9. Word Power Made Easy. Norman Lewis. W R Goyal Publishers and Distributors. Publishers. 2009
10. Textbook of English Phonetics for Indian Students. T Balasubramaniam. Macmillan Publishers.2012
11. Technical Communication: Principles and Practice. Meenakshi Raman and Sangeeta Sharma. Oxford University Press. 2015.

Chhattisgarh Swami Vivekananda Technical University, Bhilai

Semester: B.Tech – 2nd

Subject: Basic Civil Engineering & Mechanics

Total Marks in End Semester Exam: 100

Minimum number of Class Tests: 02

Branch: Common to all Branches

Course Code: A000215(020)

L: 3 T: 0 P: 0 Credits: 3

Course Objectives:

- To introduce about the properties of common building materials to the students.
- To introduce the basic concepts of concrete and foundation to the students.
- To introduce the basic concepts of surveying & levelling to the students.
- To introduce the basic concepts of general system of forces to the students.
- To introduce the simple methods of analyzing truss to the students.

UNIT - I

Building Material

Qualities of good brick, Water absorption and Compressive Strength test for bricks. Types of Cement, Ingredients of Portland cement and their functions, Fineness, Setting Times and Compressive Strength of Cement, Functions of Sand in mortar, Mortar Mix proportions for various uses.

UNIT – II

Building Construction

Ingredients of Cement Concrete, Grades of Concrete, proportions for Nominal mix concrete, Workability & Compressive Strength of Concrete, Curing of Concrete.

Necessity of foundations, Definitions of Safe bearing capacity, Ultimate bearing capacity and factor of safety, Difference between Load Bearing & Framed Construction.

UNIT - III

Surveying & Levelling

Principles of Surveying, Technical terms, Calculation of reduced level by Height of instrument and Rise & Fall method, Simple problems in levelling.

UNIT – IV

General System of Forces

Equations of equilibrium for a system of concurrent forces in a plane. Constraint, Action and Reaction. Types of support and support reactions. Free Body Diagram – Body subjected to two forces & Body subjected to three forces. Moment of a force. Theorem of Varignon, Equations of Equilibrium.

UNIT –V

Analysis of Plane Trusses

Engineering Structures, Rigid or perfect Truss, Determination of Axial forces in the members of truss, Method of Joints, Method of Sections.

Course Outcomes:

After completing the course students should be able to

- Identify the properties of common building materials.
- Understand basic concepts of concrete and foundation.
- Understand the basic concepts of Surveying & levelling.
- Understand the basic concepts of general system of forces.
- Analyze truss by simple methods.

Text books:

1. Comprehensive Basic Civil Engineering B.C. Punmia
2. Building construction by Ahuja and Birdi
3. Engineering Mechanics by A. K. Tayal

Reference books:

1. Basic Civil Engineering by Ramamurtham
2. Engineering Mechanics by R. K. Bansal

Chhattisgarh Swami Vivekananda Technical University, Bilai

Semester: B.Tech – 2nd

Subject: Chemistry-I (Lab)

Total Marks in End Semester Exam: 40

Branch: Common to all Branches

Course Code: A000221(011)

L: 0 T: 0 P: 2 Credits: 1

List of Experiments:

Choice of 8 – 10 experiments from the following:

1. Determination of surface tension and viscosity.
2. Thin layer chromatography.
3. Ion exchange column for removal of hardness of water.
4. Determination of chloride content of water.
5. Colligative properties using freezing point depression.
6. Determination of the rate constant of a reaction.
7. Determination of cell constant and conductance of solutions.
8. Potentiometry - determination of redox potentials and emfs.
9. Synthesis of a polymer/drug/ organic compounds.
10. Saponification/acid value of oil.
11. Chemical analysis of salt / organic compounds.
12. Lattice structures and packing of spheres.
13. Models of potential energy surfaces.
14. Chemical oscillations- Iodine clock reaction.
15. Determination of the partition coefficient of a substance between two immiscible liquids.
16. Adsorption of acetic acid by charcoal.
17. Use of the capillary viscosimeters to demonstrate the isoelectric point as the Ph of minimum viscosity for gelatin sols and/or coagulation of the white part of egg .
18. Spectrophotometric determination.

Course Outcomes:

The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering. The students will learn to:

- Estimate rate constants of reactions from concentration of reactants/products as a function of time
- Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
- Synthesize a small drug molecule and analyse a salt sample

Text Books:

1. Laboratory Manual Engg. Chemistry, Anupama Rajput, Dhanpat Rai & Co. (P) Ltd.
2. Laboratory Manual on Engg. Chemistry, S. K. Bhasin& Sudha Rani, Dhanpat Rai & Co. (P) Ltd.

Chhattisgarh Swami Vivekananda Technical University, Bilai

Semester: B.Tech – 2nd

Branch: Common to all Branches

Subject: Programming for Problem Solving (Lab)

Course Code: A000222(022)

Total Marks in End Semester Exam: 40

L: 0 T: 0 P: 4 Credits: 2

The laboratory should be preceded or followed by a Practical Lecture to explain the approach or algorithm to be implemented for the problem given.

Practical Lecture (L T P) – 0 0 1	Lab. work (L T P) – 0 0 3
Practical Lecture 1: Problem solving using computers	Lab1: Familiarization with programming environment
Practical Lecture 2: Variable types and type conversions	Lab 2: Simple computational problems using arithmetic expressions
Practical Lecture 3: Branching and logical expressions	Lab 3: Problems involving if-then-else structures:
Practical Lecture 4: Loops, while and for loops	Lab 4: Iterative problems e.g., sum of series
Practical Lecture 5: 1D Arrays: searching, sorting	Lab 5: 1D Array manipulation
Practical Lecture 6: 2D arrays and Strings	Lab 6: Matrix problems, String operation
Practical Lecture 7: Functions, call by value	Lab 7: Simple functions
Practical Lecture 8 & 9: Numerical methods (Root finding, numerical differentiation, numerical integration):	Lab 8 & 9: Programming for solving Numerical methods problems
Practical Lecture 10: Recursion, structure of recursive calls	Lab 10: Recursive functions
Practical Lecture 11: Pointers, structures and dynamic memory allocation	Lab 11: Pointers and structures
Practical Lecture 12: File handling	Lab 12: File operations

Laboratory Outcomes

- To formulate the algorithms for simple problems
- To translate given algorithms to a working and correct program
- To be able to correct syntax errors as reported by the compilers
- To be able to identify and correct logical errors encountered at run
- To be able to write iterative as well as recursive programs
- To be able to represent data in arrays, strings and structures and manipulate them through a program
- To be able to declare pointers of different types and use them in defining self referential structures.
- To be able to create, read and write to and from simple text files.

Text Books:

1. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill.
2. E. Balaguruswamy, Programming in ANSI C, Tata McGraw-Hill.

Reference Books :

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India

Chhattisgarh Swami Vivekananda Technical University, Bilai

Semester: B.Tech – 2nd

Subject: Basic Civil Engineering & Mechanics (Lab)

Total Marks in End Semester Exam: 40

Branch: Common to all Branches

Course Code: A000223(020)

L: 0 T: 0 P: 2 Credits: 1

List of Experiments:

1. Water Absorption test on bricks.
2. Compressive strength test on bricks.
3. Fineness of cement by sieve analysis.
4. Initial setting time of cement.
5. Compressive Strength test of Cement.
6. Sieve analysis and F.M. of fine aggregate.
7. Sieve analysis and F.M. of coarse aggregate.
8. Compressive strength test of Concrete.
9. Difference in level between two given stations by Height of Instrument method.
10. Difference in level between two given stations by Rise & Fall method.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: B.Tech – 2nd

Branch: Common to all Branches

Subject: Workshop Practice/Manufacturing Process (Lab)

Course Code: A000224(037)

Total Marks in End Semester Exam: 40

L:0 T:1 P:4 Credits: 3

Course Objective:

The course is designed to meet the following objectives.

- Acquire skills in engineering practice.
- To identify tools, work materials and measuring instruments for different trades.

Unit I:

Forging: Introduction to manufacturing process, and its classification, use of various forging tools, forging operations, forging defects.

Suggested Jobs: Forging of chisel, forging of screw driver.

Unit II:

Carpentry: Different types of wood, carpentry tools, different joints, polishing, wood working Lathe.

Suggested Jobs: Making of name plate, stools and a small job on wood working lathe.

Unit III:

Fitting Shop: Introduction to bench working. Work holding devices, measuring instruments, fitting tools and their specification, types of joints fitting operations.

Suggested Jobs : Preparation of job by use of filing, sawing, chipping, drilling and tapping operations.

Unit IV: Moulding: Pattern materials, allowances, moulding terminology.

Suggested Jobs : Prepare moulds of patterns, casting small household objects like paper-weight etc.

Unit V: Welding: Study and use of gas, Arc, soldering, brazing methods. Safety precaution.

Suggested Jobs : Preparing Lap and Butt joints by gas and arc welding method.

Unit VI: Metal Cutting: Common machining operations, different machine tools, cutting tools materials, different type of Lathes, Lathe operations, shaper and its specification. Quick return mechanism of shaper.

Suggested Jobs : Making small shaft, cutting screw thread on Lathe.

Course Outcomes:-

Upon completion of this course, the students will gain knowledge of the different manufacturing processes which are commonly employed in the industry, to fabricate components using different materials.

Text Books:

1. Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., “Elements of Workshop Technology”, Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.
2. Rao P.N., “Manufacturing Technology”, Vol. I and Vol. II, Tata McGrawHill House, 2017.
3. B.S. Raghuvanshi, Workshop Technology, Vol I&II, Dhanpat Rai & Sons.

Reference Books:

1. Kalpakjian S. And Steven S. Schmid, "Manufacturing Engineering and Technology", 4th edition, Pearson Education India Edition, 2002.
2. Gowri P. Hariharan and A. Suresh Babu, "Manufacturing Technology – I" Pearson Education, 2008.
3. Roy A. Lindberg, "Processes and Materials of Manufacture", 4th edition, Prentice Hall India, 1998.
4. M.L.Begeman and B.H.Amstead, Manufacturing Process, Wiley
5. W.A.J.Chapman and E. Arnold, Workshop Technology, Vol I, II, & III, CRC Press, Prentice Hall
6. V. Narula, Workshop Technology, S.K. Kataria and sons.