Chhattisgarh Swami Vivekanand Technical University, Bhilai

SCHEME OF TEACHING AND EXAMINATION

BE (MINING ENGINEEERING) III SEMESTER

S. No.	Board of Study	Subject Code	Subject	Periods per week			Scheme of Exam			Total Marks	Credit L+(T+P)/2
							Theory/Practical				
				L	T	P	ESE	CT	TA		
1	Appl. Mathematics	339351(14)	Mathematics-III	3	1	-	80	20	20	120	4
2	Civil Egg.	339352(20)	Mechanics of Solids & Fluid Mechanics	3	1	-	80	20	20	120	4
3	Electronics & Telecom.	339353(28)	Programming with C	3	1	-	80	20	20	120	4
4	Mining Egg.	339354(39)	Mining Geology-I	4	-	-	80	20	20	120	4
5	Mining Engg.	339355(39)	Mine Surveying-I	4	1	-	80	20	20	120	5
6	Mining Engg.	339356(39)	Mine Development	3	1	-	80	20	20	120	4
7	Mining Engg.	339361(39)	Mine Development Lab	-	-	2	40	-	20	60	1
8	Mining Engg.	339362(39)	Mining Geology-I Lab	-	-	2	40	-	20	60	1
9	Mining Engg.	339363(39)	Mine Surveying-I Lab	-	-	4	40	-	20	60	2
10	Elect. & Telecom.	339364(28)	Programming with C Lab	-	-	4	40	-	20	60	2
11	Humanities	339365(46)	Value Education	-	-	2	-	-	40	40	1
12			Library	-	-	1	-	-	-	-	-
Total				**20**	**5**	**15**	**640**	**120**	**240**	**1000**	**32**

L: Lecture, T: Tutorial, P: Practical, ESE: End Semester Exam, CT: Class Test, TA: Teachers Assessment
Note: Duration of End Semester Examination all theory papers will be of Three Hours duration.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Mathematics – III**	Code:	**339351(14)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
ESE Duration:	**Three Hours**	**Maximum Marks: 80**	**Minimum Marks: 28**

Course Objectives:

1. To make the students understand that Fourier series analysis is a powerful method where the formulas are integrals and to have knowledge of expanding periodic functions that explore variety of applications of Fourier series.
2. To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differentials equations.
3. To have a thorough knowledge of PDE which arise in mathematical descriptions of situations in engineering.
4. To provide a sound background of complex analysis to perform a thorough investigation of major theorems of complex analysis and to apply these ideas to a wide range of problems that include the evaluation of both complex line integrals and real integrals.
5. To study about a quantity that may take any of a given range of values that can't be predicted exactly but can be described in terms of their probability

Course Outcome: After studying the contents of the syllabus in detail the students will be able to

1. define Fourier series including half range series, Harmonic analysis and variety of its applications.
2. define (mathematically) Unit step, Unit impulse, Laplace transforms, its properties, Inverse and applications to solve ordinary differential equations.
3. form and solve by direct integration method Linear equation of first order including Homogeneous and Non-homogeneous Linear equations and also method of separation of variables.
4. solve difficult problems using theorems of complex analysis and apply Residue theorem to evaluate real integrals.
5. understand discrete and continuous probability distribution and be able to find mean and standard deviation and use the Uniform distribution.

UNIT- I **FOURIER SERIES:** Euler's Formula, Functions having points of discontinuity, Change of interval, Even & Odd functions, Half range series, Harmonic analysis.

UNIT-II **LAPLACE TRANSFORM:**Definition, Transform of elementary functions, Properties of Laplace transform, Transform of derivatives & integrals, Multiplication by tn, Division by t, Evaluation of integrals, Inverse Laplace Transform, Convolution theorem, Unit step function, Unit impulse function, Periodic function, Application to solution of ordinary differential equations.

UNIT- III **PARTIAL DIFFERENTIAL EQUATION:**Formation, Solution by direct integration method, Linear equation of first order, Homogeneous linear equation with constant coefficients, Non-homogeneous linear equations, Method of separation of variables.

UNIT-IV **COMPLEX VARIABLES:**Derivative, Cauchy-Riemann equations, Analytic functions, Harmonic functions, Flow problems, Complex integration, Cauchy theorem, Cauchy integral formula, Taylor & Laurent series, Singularity, Residue, Evaluation of real definite integrals.

UNIT-V **STATISTICS:**Random variables, Discrete & continuous probability distributions, Expectation, Mean & Standard Deviation, Moments & moment generating function, Distributions- Binomial, Poisson and Normal distributions.

Text Books:

1. Higher Engg. Mathematics by Dr. B.S. Grewal– Khanna Publishers.
2. Advanced Engg. Mathematics by Erwin Kreyszig – John Wiley & Sons.

Reference Books:

1. Advanced Engg.Mathematics by R.K. Jain and S.R.K. Iyengar – Narosa Publishing House.
2. Applied Mathematics by P.N.Wartikar& J.N. Wartikar. Vol- II– Pune VidyarthiGrihPrakashan,Pune
3. Applied Mathematics for Engineers & Physicists by Louis A. Pipes- TMH.

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Mechanics of Solids & Fluid Mechanics**	Code:	**339352(20)**
Total Theory Periods:	**36**	Total Tutorial Periods:	**12**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
ESE Duration:	**Three Hours**	**Maximum Marks: 80**	**Minimum Marks: 28**

Course Objectives:

1. Discuss the stress and strain relationship, Mohr's Circle, principal stress and principal strain, tension and compression in composite bars.
2. Derive the bending stresses in beams and plates.
3. Determine the slope and deflection of beams by deflection methods, area moment and conjugate beam methods.
4. Study the physical properties of the fluid, compressibility & incompressibility of fluid, Newtonian and Non-Newtonian fluids.
5. Study the fluid in static and kinematics

Course Outcome:

1. The students are expected to enhance the technical knowledge on relation between stress & strain, Mohr's circle, principal stress & principal strain.
2. The students are expected to possess ability to identify, formulate, and solve engineering problems in bending stresses in beams and plates, deflection of beams and knowledge in fluid statics & fluid dynamics.
3. The students are expected to posses ability to use the techniques, skills and modern engineering tools necessary for mechanics of solid & fluid mechanics.
4. Work effectively as an individual and as a member of multidisciplinary team.

UNIT- I **Concept of Stress and Strain:** Stress and strain at a point; Axial and shear stresses' Ultimate an working stresses; Relation between stress and strain' Poisson's Ratio; Two dimensional state of strain' Principle stresses and Principle planes' Mohr's Circle' Two state of strain' Principle strains and principle axis of strain; Determination of Principle strain from strain measurements; Calculation of Principle stresses from; Principle strains; Composite bars in tension and compassion; Thermal stresses in composite bars.

UNIT-II **Bending Stresses in Beams and plates:** Pure bending' Bending Stresses' Section Modulus of rolled and built up sections Composite beams' Distribution of normal and shear stresses across the section of a simple beam with vertical section of symmetry; Theory of plates.

UNIT- III **Deflection of beams:** Slope and deflection of beams by deflection methods; Area moment and conjugate beam methods' propped cantilever and fixed beams.

UNIT-IV **Introduction to Fluid Mechanics:** Physical properties of fluids; Compressible and Incompressible fluids; Newtonian and Non-Newtonian fluids.

UNIT-V **Fluid Statics:** Pressure, density and height relationships; manometer pressure on curved and plane surfaces; Centre of Pressure; Buoyancy; Stability of Immersed and Floating bodies; Fluids in relative equilibrium.

UNIT-VI **Fluid Kinematics:** Classification of flow: Uniform and Non-Uniform; Steady and Non- Steady; Laminar and Turbulent; One, Two, Three dimensional flows; Stream lines; Streak lines; Path lines; Stream Tubes; Elementary Explanation of stream function and velocity potential; Basic idea of flow nets.

Text Books:

Strength of Material – Dr. Sadhu Singh – Khanna Publishers
Elements of Strength of Material – Timo Shenko & Young – EWP Press
Strength of Material – R.K. Rajput – Dhanpat Rai & Sons
Fluid Mechanics and Machines – Dr. A.K. Jain (Khanna Publications)
Fluid Mechanics and Machines – Dr. R.K. Bansal (Laxmi Publications)

Reference Books:

Strength of Material – Rider – ELBS
Mechanics of Material – F.P. Bear & E.E. Johnston – McGraw Hill
Mechanics of Material – J.M. Gera & Time Shenko – CBS Publishers
Fluid Mechanics – Dr. P.N. Modi (Standard Book House)
Mechanics of Fluid – Irving H. Shames (McGraw Hill)
Introduction to Fluid Mechanics – James A. Fay (Prentice Hall India)

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Programming with C**	Code:	**339353(28)**
Total Theory Periods:	**36**	Total Tutorial Periods:	**12**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
ESE Duration:	**Three Hours**	**Maximum Marks: 80**	**Minimum Marks: 28**

Course Objectives:

1. Discuss the history and development of C compiler, data types, functions, operators, debugging.
2. Explain if-else statements, conditional operator, loop control, arrays and pointer.
3. Explain declaring and defining functions, library function, recursion.
4. Discuss the reading and writing strings & declaring and using structures.
5. Discuss the reading and writing the text files through C programs.

Course Outcome:

1. The students are expected to enhance the technical knowledge on C language
2. The students are expected to possess ability to identify, formulate, and solve engineering problems in data types, functions, operator, arrays, pointer, functions, debugging, structures.
3. The students are expected to posses ability to use the techniques, skills and modern engineering tools necessary for C Programing
4. Work effectively as an individual and as a member of multidisciplinary team.

UNIT- I Introduction to C Language: history and development C compilers. Data types, types of instructions, input/output functions. Operators, precedence and associativity of operators. Type casting, Developing simple programs, compilation, debugging and testing of programs. Relevance of C language.

UNIT-II Conditional constructs: if statement, if-else statements , nested if-else ,forms of if. Conditional operator, Switch case construct. Loop control structures, nested loops, break and continue statements. goto statement.
Arrays: Syntax and definition, one and multidimensional arrays, reading and writing an array. Pointers and arrays.

UNIT- III Functions: Declaring and defining functions, storage classes, call by value, introduction to pointer data type, call by reference, using library functions in programs, macro definitions. Preprocessor directives - #if, #elif, #define etc. Passing arrays into functions. Recursion.

UNIT-IV Strings: reading and writing strings, passing a string into a function, using library functions to manipulate strings. Array of strings.
Structures: Declaring and using structures. Array of structures, passing structures into function. Unions and enums, Pointers to structures Bit fields.

UNIT-V File Handling: reading and writing text files though C programs. File manipulating functions: fputc, fgetc, fgets, fputs, fseek, ftell etc. Working with Binary files ,fread and fwrite. Command line arguments. Bitwise operators in C.

Text Books:

1. Let us C – YashwantKanetkar BPB Publication
2. Programming in ANSI C – E. Balaguruswamy Tata Mc-Gcraw Hill

Reference Books:

1. The C programming Language by Dennis M Ritchie and Kernighan (PHI)
2. C for all by S. Thamarai Selvin & R. Murugesan (Anuradha Agencies)
3. Programming in C by Ghosh (PHI)
4. Computer Programming in C by V. Rajaraman (PHI)

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Mining Geology – I**	Code:	**339354(39)**
Total Theory Periods:	**48**	Total Tutorial Periods:	**NIL**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
ESE Duration:	**Three Hours**	**Maximum Marks: 80**	**Minimum Marks: 28**

Course Objectives:

1. Discuss the size, shape, mass & density of earth, age of earth, internal structure of earth, earthquake and volcanism.
2. Explain physical properties of the mineral.
3. Brief discussion of igneous rock, sedimentary rock and metamorphic rock.
4. Discuss the folds, faults, joints, geological maps.

Course Outcome:

1. The students are expected to enhance the technical knowledge on shape, size, mass & density of earth, age of earth, structure of the earth.
2. The students are expected to possess ability to identify, formulate, and solve engineering problems in properties of minerals, structural geology, types of rocks and geological maps
3. The students are expected to posses ability to use the techniques, skills and modern engineering tools necessary for Engineering Geology.
4. Work effectively as an individual and as a member of multidisciplinary team.

UNIT- I **The Earth in Space and Time:** Solar System; Size, Shape, Mass and Density of Earth; A Brief idea of the origin and the age of the Earth; Interior of the Earth- seismic data, Density and Pressure within the Earth; The internal structure and composition of Earth;; Elementary knowledge of Diastrophism, earthquakes and volcanism, Volcanic and earthquake belts, and their relationship with plate tectonics.

UNIT-II **Mineralogy:** Physical Properties of Minerals; Classification of various Rock forming Minerals; Introduction and preliminary study of principle Rock forming Mineral groups - Garnet, Pyroxene, Amphibole, Mica, Feldspar and Felspethoid, Megascopic properties of Economically important non Silicate Minerals.

UNIT- III **Igneous and Metamorphic Petrology:** Elementary knowledge of Magma and its Crystallization; Classification of Igneous Rocks; Textures and Structures of Igneous Rocks; Petrographic Description of Common Igneous Rocks; Agents and Types of Metamorphism; Depth zones, Facies and Grades of Metamorphism and Petrographic Description of Common Metamorphic Rocks.

UNIT-IV **Sedimentary Petrology:** Textures and Structures of Sedimentary Rocks**;** Sedimentary Processes- Weathering, Transportation and Deposition; Classification and Petrographic Description of Common Sedimentary Rocks.

UNIT-V **Structural Geology:** Concept of Deformation; Primary and Secondary Planer and Linear structure of Rocks; Topography and its representations; Altitude of strata- Dip and strike; Outcrop patterns; Width of Outcrop and thickness of beds; Structural Contours; Geological Maps; Study of Unconformity; Folds, Joints, Faults and their influence in Mining Operations.

Text Books:

1. A Text Book of Geology : P.K. Mukherjee
2. Engineering And General Geology : Parbin Singh

Reference Books:

3. Physical And Engineering Geology : S.K. Garg
4. Rutley's Elements of Mineralogy : H.H.Read
5. Principles Of Petrology : G.W.Tyrell
6. Structural Geology : M.P.Billings
7. Geological Maps : G.W.Chiplonkar
8. Applied Geology : S. Banger

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Mine Surveying – I**	Code:	**339355(39)**
Total Theory Periods:	**48**	Total Tutorial Periods:	**12**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
ESE Duration:	**Three Hours**	**Maximum Marks: 80**	**Minimum Marks: 28**

Course Objectives:

1. Discuss the chain survey for linear measurements
2. Explain the compass survey
3. Discuss the plane table surveying and Miner's Dial
4. Brief discussion on types of leveling instruments, temporary and temporary adjustment of leveling instruments, trigonometric leveling, reciprocal leveling.

Course Outcome:

1. The students are expected to enhance the technical knowledge on linear measurements by chain surveying & tape surveying, compass surveying and plane table surveying.
2. The students are expected to possess ability to identify, formulate, and solve engineering problems in leveling.
3. The students are expected to posses ability to use the techniques, skills and modern engineering tools necessary for mine surveying.
4. Work effectively as an individual and as a member of multidisciplinary team.

UNIT- I **Chain Survey:** Linear Measurements; Types of chains; Tapes; Errors in chaining and corrections in linear measurements; Direct and indirect Ranging; Principles of chain surveying offsets; Limiting length of offsets; Booking field notes; Obstacles in chaining; Instruments for setting out right angles.

UNIT-II **Compass Survey:** Theory of Magnetism; Dip of Magnetic needle; Prismatic Compass; Surveyor's Compass; Bearings; Designation of Bearings; Calculation of Included Angles; Local Attraction; Magnetic Declination.

UNIT- III **Plane Table Surveying:** Principles of Plane Tabling; Working operations; Methods of Plane Table Surveying; Two and Three point problems.

UNIT-IV **Miner's Dial:** Construction; Use; Tests and Adjustments; Loose and fast Needle surveying; Common sources of errors in Dial surveying; Methods of elimination and compensation.

UNIT-V **Levelling:** Definitions of important terms used in levelling; Development in levelling Instruments; Types and Constructional details; Temporary and Permanent Adjustments; Methods of levelling; Straight edge levelling; Fly levelling; Check levelling; Reciprocal levelling; Longitudinal Sections; Cross- Sectioning; Trigonometric levelling; Methods of booking and reduction of levels; Levelling through drifts and shafts (Including steeply inclined shafts) ; Plumbing measurements of depth of shaft and subsidence.

Text Books:

1. Surveying- Vol.I, by B.C. Purmia
2. Surveying & Labelling. Vol-I by T.P.Kanethar & S.V.Kulkarni.

Reference Books:

1. Metalliferous Mine Surveying : Frederick Winniberg
2. Surveying – by Husain & Nagnas

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Mine Development**	Code:	**339356(39)**
Total Theory Periods:	**36**	Total Tutorial Periods:	**12**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
ESE Duration:	**Three Hours**	**Maximum Marks: 80**	**Minimum Marks: 28**

Course Objectives:

1. Discuss the various drilling machines are used .for exploratory drilling.
2. Explain the drives of inclines, drifts and adits for the opening of the underground mines.
3. Explain the drilling, blasting, loading, transportation, ventilation, lightening and drainage operation used in shaft sinking in the underground mines.
4. Discuss the various methods of shaft sinking.
5. Explain the advantages and disadvantages of surface mining and underground mining.
6. Discuss the various types of machinery used in the underground mining and surface mining.

Course Outcome:

1. The students are expected to enhance the technical knowledge on exploratory drilling, drivage of inclines, adits and shaft sinking
2. The students are expected to possess ability to identify, formulate and solve engineering problems in drilling and shaft sinking.
3. The students are expected to possess ability to use the techniques, skills, and modern engineering tools necessary for mine development practice.
4. Work effectively as an individual and as a member of a multidisciplinary team.

UNIT- I **Exploratory Drilling:** Drilling machines used for exploratory drilling viz. Rotary & Percussive, their attachments; Core Barrels; Conditions of applicability of drilling methods; Borehole Survey, Directional drilling

UNIT-II **Drivage of Inclines/Drifts/Adits:** Types of Openings; Choice of Openings; Location of Openings; Drilling, blasting, loading and transportation of muck during drivage of inclines/adits/drifts, Ventilation, lighting and drainage, Extension of center line; Organization and cycle of operations; Mechanized methods of drivages of inclines/adits/drifts.

UNIT- III **Shaft Sinking:** Drilling, blasting, loading and transportation of muck, Ventilation, lighting and drainage, Extension of center line; Shaft lining and its design; Special methods of shaft sinking; Shaft boring; Deepening and widening of shafts. Upward drivage; Organization and cycle of operations.

UNIT-IV **Introduction to Underground Mining:** Definition of important terms used in underground mining, advantages and disadvantages of underground mining, Mine development, Activities involved in development of a mine, Stages in the life of a mine, Introduction to unit operations in underground mining. Choice of method of mining, Introduction to various Underground Mining methods. Introduction to various types of machineries used in Underground mining.

UNIT-V **Introduction to surface Mining:** Definition of important terms of surface mining, Advantages and disadvantages of surface mining, mineral deposits amenable to surface mining, Various surface mining methods, Introduction to unit operations in surface mining. Introduction to various types of machineries used in surface mining.

Text Books:

1. Surface Mining: G.B. Misra
2. Elements of Mining Technology (Vol. 1 & 3): D. J. Deshmukh
3. Coal Mining: R.D.Singh

Reference Books:

1. Mining Engineer's Handbook (Vol. 1&2), 2nd Edition: Edited by Harold Hartman
2. U.M.S. Notes :
3. Mining of Mineral Deposits : Shevyakov
4. Modern Coal Mining : Samir Das
5. Introduction to mining : Hartman

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Mine Development Laboratory**	Code:	**339361(39)**
Total Lab Periods:	**24**	Batch Size:	**30**
Maximum Marks:	**40**	Minimum Marks:	**20**

List of Experiments: *(At leastTen experiments are to be performed by each student)*

1. Study of exploratory drilling by manual and power operated percussive drilling machine.
2. Study of working of diamond drilling machine.
3. Study of different types of drilling tools and bits required for exploratory drilling.
4. Study of Single tube and double tube Core barrel.
5. Study of surface arrangements required during shaft sinking and its cycle of operation.
6. Study of various special methods of Shaft sinking.
7. Study of drivage of Incline/Adit by conventional method using drilling and blasting, cycle of operation and calculation of manpower.
8. Study of drivage of Incline using tunnel boring machine.
9. Study of erection of temporary lining during shaft sinking operation.
10. Study of erection of permanent brick/concrete lining during shaft sinking.
11. Study of development of a coal mine by Board & Pillar method.
12. Study of development of a coal mine by Longwall advancing & retreating method.

Equipment/Machines/Instruments/Tools/Software Required:

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Mining Geology – I Laboratory**	Code:	**339362(39)**
Total Lab Periods:	**24**	Batch Size:	**30**
Maximum Marks:	**40**	Minimum Marks:	**20**

List of Experiments: *(At leastTen experiments are to be performed by each student)*

Megascopic Description of Rock Forming Minerals.
Megascopic Description of important Igneous, Sedimentary, Metamorphic Rocks.
Basic Concept of Contours, Attitude of Beds, Width of Outcrop, True and Apparent Dips, Rules of V`s.
Study of Geological Maps and Preparation of Cross Sections.

Equipment/Machines/Instruments/Tools/Software Required:

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Mine Surveying – I Laboratory**	Code:	**339363(39)**
Total Lab Periods:	**48**	Batch Size:	**30**
Maximum Marks:	**40**	Minimum Marks:	**20**

List of Experiments: *(At leastTen experiments are to be performed by each student)*

1 Ranging and Chaining of line of 50 Meter.

2 Determination of width of an obstacle which can be seen across but can't bechained.

3 Determination of area of a field by Cross staff survey.

4 Study of various types of chained.

5 Determination of included angle with the help of a Prismatic Compass.

6 Plotting a closed traverse and elimination of errors.

7 Determination of width of an inaccessible obstacle by intersection.

8 Determination of location of instrument station by two point problem.

9 Determination of location of instrument station by two point problem.

10 Determination of location of instrument station by three point problem.

11 Study of Miner's dial.

12 Study of Dumpy level.

13 Determination of difference in elevation and gradient between two stations using dumpy level.

14 Fly leveling by Tilting level.

15 Longitudinal sectioning by Level.

Equipment/Machines/Instruments/Tools/Software Required:

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Programming with C Laboratory**	Code:	**339364(28)**
Total Lab Periods:	**48**	Batch Size:	**30**
Maximum Marks:	**40**	Minimum Marks:	**20**

List of Experiments: *(At leastTen experiments are to be performed by each student)*

1. Write a program to take the radius of a sphere as input and print the volume and surface and surface area of that sphere.
2. Write a program to take a 5-digit number as input and calculate the sum of its digits.
3. Write a program to take three sides of a triangle as input and verify whether the triangle is an isosceles, scalene or an equilateral triangle.
4. Write a program that will take 3 positive integers as input and verify whether or not they form a Pythagorean triplet or not.
5. Write a program to print all the Prime numbers between a given range.
6. Write a program to define a function that will take an integer as argument and return the sum of digits of that integer
7. Write a program to define a macro that can calculate the greater of two of its arguments. Use this macro to calculate the greatest of 4 integers.
8. Write a program to define a recursive function that will print the reverse of its integer argument.
9. Write a program to print the sum of first N even numbers using recursive function.
10. Write a program to sort an array using Bubble sort technique.
11. Write a program that will take the elements of two integer arrays of 5 element each, and insert the common elements of both the array into a third array (Set intersection)
12. Write a program to take 5 names as input and print the longest name.
13. Write a program to define a structure Student that will contain the roll number, name and total marks of a student. The program will ask the user to input the details of 5 students and print the details of all the students whose total marks is greater than a given value.
14. Write a program to define a union Contact that will contain the members Mobile no and E-mail id. Now define a structure Employee that will contain name, roll number, mode of contact (mob/e-mail) and a variable of type Contact as members. The program will ask the user to give the details of two Employees including mode of contact and the contact num/ E-mail. Print the details of both the Employees.
15. Write a program that will ask the user to input a file name and copy the contents of that file into another file.
16. Write a program that will take any number of integers from the command line as argument and print the sum of all those integers.

List of Equipments/Machine Required:

PCs, C-Compiler

Recommended Books:

Programming in ANSI C – E. Balaguruswamy Tata Mc-Gcraw Hill

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Name of program:	**Bachelor of Engineering**		
Branch:	**Mining Engineering**	Semester:	**III**
Subject:	**Value Education**	Code:	**339365(46)**
No. of Periods:	**2 Periods/Week**	Total Tutorial Periods:	**NIL**
Maximum Marks:	**40**	**Minimum Marks:**	**24**

Course Objectives:

1. This course is designed to provide the importance of education with why, what & how.
2. To impart students with an understanding of fundamental humanitarian viewpoint and its outcomes.
3. To provide the knowledge about whole existence and its impact on values.
4. To bring the awareness about life long exercise so that they can fulfill their responsibility towards themselves, the family, the society, the planet.

UNIT- I **Aim of Education and Necessity for Value Education:** Education in values/wisdom/etc and education in traits/technologies/etc as the two fundamental strands of education; Answer to the frequently asked questions such as "Why to do studies", "What studies to do in overall", "How to do studies in a proper way", "How to think systematically and talk systematically"

UNIT-II **Humanitarian Viewpoint and Basic Human Objective:** Meaning and concept of happiness, Need for a fundamental viewpoint to judge things in all cases of human concerns, Proposal of the natural path of humanitarian coexistentialism; Consciousness development and its expression; Fundamental want of sustainable happiness in human being; Understanding the distinct activities and needs of self (I) and body in human being; Fundamental goal of human being; Sustainable-solution in individual (At the place of delusion); Sustainable-prosperity in family (At the place of poverty); Sustainable-cooperation in society (At the place of competition); Sustainable-coexistence in planet (At the place of struggle)

UNIT- III **Elements of Holistic and Systematic Perspective:** Need for study of fundamental information categories to develop holistic perspective; Particular-time actions and general-time laws; Need for fundamental information sequence to develop systematic perspective, Some examples for systematic study sequence

UNIT-IV **Elements of Society-friendly and Environment-friendly Goals:** Elements of Knowledge of whole existence; Elements of Knowledge of human being; Elements of fundamental Values and Wisdom; Value spectrum with reference to general relationships and particular relationships of the objects in nature; Elements of History and Contemporarity used to set current goals; Elements of Sciences and Techniques to formulate methods to achieve goals; Elements of Motoricity and Mattericity to make actions to execute the methods

UNIT-V **Lifelong Exercise for All-round Sustainability:** Collecting information for sustainability issues; Motivating people towards sustainable life-style; Ability to identify and develop appropriate technologies and management patterns for society-friendly and environment-friendly systems for production/protection/utilization/experimentation; Ability to establish and execute the fundamental five-fold system in order to ensure sustainable peace-and-prosperity worldwide.

Text Books:

Value Education for Consciousness Development by Dr P B Deshmukh, Radha K Iyer, and Deepak K Kaushik (2nd Edition, 2012, ISBN: 978-81-924034-0-3)

Reference Books:

1. International Research Handbook on Values Education and Student Wellbeing by Terence Lovat, Ron Toomey, Neville Clement (Eds.), Springer 2010, ISBN: 978-90481-86747
2. Values Education and Lifelong Learning: Principles, Policies, Programmes by David N Aspin and Judith D Chapman (Eds.); Springer 2007, ISBN: 978-1-4020-6183-7
3. Fundamentals of Ethics for Scientists and Engineers by E G Seebaur and Robert L Berry, 2000, Oxford University Press