Annexure 2

APPLIED MATHEMATICS – II
(ORDINARY & PARTIAL DIFFERENTIAL EQUATIONS AND TRANSFORM)

Course Code: MAT 201 **Credit Units: 04**

Total Hours: 40

Course Objective:

The objective of this course is to familiarize the prospective engineers with techniques in ordinary and partial differential equations, transforms and complex analysis. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines.

Course Contents:

Module I: Ordinary differential equations: (9 Hours)

Equation of first order and first degree, Exact, linear and Bernoulli'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. Higher order linear differential equations with constant coefficients, Second order linear differential equations with variable coefficients, method of variation of parameters, Solution by series method.

Module II: Partial Differential Equations: (8 Hours)

Formation of Partial Differential Equations, First order partial differential equations, solutions of first order linear PDEs; Solution to homogenous and non-homogenous linear partial differential equations of second order by complimentary function and particular integral method with constant coefficients. Non linear partial differential equation of first order, Charpit's method.,Separation of variable method for the solution of wave and heat equations.

Module III: Laplace Transform and Fourier series: (9 Hours)

Laplace Transform: Introduction of Laplace Transform, Laplace Transform of elementary functions, properties of Laplace Transform, change of scale property, second shifting property. Laplace transform of the derivative, inverse Laplace transform and its properties. Convolution theorem. Applications of Laplace Transform to solve the ODEs. Introduction of Fourier series, Fourier series for discontinuous functions, Fourier series for even and odd function, Half range series.

Module IV: Complex Variable – Differentiation: (7 Hours)

Function of complex variable, differentiation, analytic functions, Cauchy-Riemann equations, harmonic functions, finding harmonic conjugate; elementary analytic functions (exponential, trigonometric, logarithm) and their properties; conformal mappings, Mobius transformations and their properties.

Module V: Complex Variable – Integration: (7 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.

Course Outcomes:

- Upon completion of this course, students will be able to solve field problems in engineering involving ODEs, PDEs.
- The effective mathematical tools for the solutions of differential equations that model physical processes.
- The students will be able to use Laplace transform to solve differential equations.
- The student will be able to solve PDEs by using the concept of Fourier series.
- The concept of functions of complex variables with respect to differentiation and integration.
- The computation of some special real integrations using complex integration.

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance

Suggested Text/Reference Books:

- G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
- Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
- W. E. Boyce and R. C. Di Prima, Elementary Differential Equations and Boundary Value Problems, 9th Edition., Wiley India, 2009.
- S. L. Ross, Differential Equations, 3rd Edition, Wiley India, 1984.
- E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall of India, 1995.
- E. L. Ince, Ordinary Differential Equations, Dover Publications, 1958.
- N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.

Annexure 2

APPLIED PHYSICS - I

Course Code: PHY 101 **Credit Units: 04**

Total Hours: 40

Course Objective:
Aim of this course is to introduce the students to fundamentals of graduate level physics, which form the basis of all applied science and engineering

Course Contents:

Module I: Electromagnetics: (10 Hours)
Scalar and vector fields, gradient of a scalar field, physical significance of gradient, equipotential surface. Line, surface and volume integrals, Divergence and curl of vector field and mathematical analysis physical significance, Electric flux, Gauss' law, Proof and Applications, Gauss divergence and Stokes theorems.
Differential form of Gauss' Law, Amperes' Law, Displacement current, Faradays Law, Maxwell equations in free space & isotropic media (Integral form & differential form), EM wave propagation in free space, Poynting vector.

Module II: Special Theory of Relativity: (10 Hours)
Michelson-Morley experiment, Importance of negative result, Inertial & non-inertial frames of reference, Einstein's postulates of Special theory of Relativity, Space-time coordinate system, Relativistic Space Time transformation (Lorentz transformation equation), Transformation of velocity, Addition of velocities, Length contraction and Time dilation, Mass-energy equivalence (Einstein's energy mass relation) & Derivation of Variation of mass with velocity,

Module III: Wave Mechanics: (10 Hours)
Wave particle duality, De-Broglie matter waves, phase and group velocity, Heisenberg uncertainty principle, wave function and its physical interpretation, Operators, expectation values. Time dependent & time independent Schrödinger wave equation for free & bound states, square well potential (rigid wall), Step potential.

Module IV: Semiconductor and Electronic Materials: (10 Hours)
Band Theory of Solids, Semi-conductors: Intrinsic and Extrinsic,Carreir concentration, Direct and indirect band-gaps, Types of Electronic materials, p-n Junction Diode,Diode Equation, Breakdown in p-n Junction Diode: Avalanche and Zener, Zener Diode and its applications photoconductivity and photovoltaics. Superconductivity, Meissner Effect, Type I and Type II Superconductors

Course Outcomes:

After successful completion of the course students will have the knowledge and skill to:

- Apply vector calculus to static electric-magnetic fields in different engineering situations.
- Analyze and Apply Maxwell's equation to diverse engineering problems.
- Relate semiconductor material properties to semiconductor devices.

Examination Scheme:

Components	Att.	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

- Physics of waves, W. C. Elmore & M. A. Heald
- Introduction to Electrodynamics, D. J. Griffith
- Engineering Physics, Satya Prakash
- Concept of Modern Physics, A. Beiser
- Solid State Physics, S. O. Pallai

Annexure 2

BASIC ELECTRICAL ENGINEERING

Course Code: ECE 101 **Credit Units: 03**
Total Hours: 30

Course Objective:
The objective of the course is to provide a brief knowledge of Electrical Engineering to students of all disciplines. This Course includes some theorems related to electrical, some law's related to flow of current, voltages, basic knowledge of Transformer, basic knowledge of electromagnetism, basic knowledge of electrical network.

Course Contents:

Module I: DC Circuits: (7 hours)
Electrical circuit elements (R, L and C), voltage and current sources, Kirchhoff's current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin's and Norton's Theorems. Time-domain analysis of first-order RL and RC circuits.

Module II: AC Circuits: (7 hours)
Representation of sinusoidal waveforms, peak and R.M.S. values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance. Three- phase balanced circuits, voltage and current relations in star and delta connections.

Module III: Transformers: (6 hours)
Magnetic materials, BH characteristics, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

Module IV: Electrical Machines: (6 hours)
Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dc motor. Construction and working of synchronous generators.

Module V: Power Converters: (4 hours)
DC-DC buck and boost converters, duty ratio control. Single-phase and three-phase voltage source inverters; sinusoidal modulation.

Course Outcomes:

- To understand and analyze basic electric and magnetic circuits.
- To study the working principles of electrical machines and power converters.
- To introduce the components of low voltage electrical installations.

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance

Text & References:

- D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
- D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.
- L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.
- E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
- V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.

Annexure 2

OBJECT ORIENTED PROGRAMMING USING C++

Course Code: CSE 204 **Credit Units: 03**

Total Hours: 30

Course Objective:

The objective of this module is to introduce object oriented programming. To explore and implement the various features of OOP such as inheritance, polymorphism, Exceptional handling using programming language C++. After completing this course student can easily identify the basic difference between the programming approaches like procedural and object oriented.

Course Contents:

Module I: Introduction: (6 Hours)

Review of C, Difference between C and C++, Procedure Oriented and Object Oriented Approach. Basic Concepts:Objects, classes, Principals like Abstraction, Encapsulation, Inheritance and Polymorphism. Dynamic Binding, Message Passing. Characteristics of Object-Oriented Languages. Introduction to Object-Oriented Modeling techniques (Object, Functional and Dynamic Modeling).

Module II: Classes and Objects: (7 Hours)

Abstract data types, Object & classes, attributes, methods, C++ class declaration, Local Class and Global Class, State identity and behaviour of an object, Local Object and Global Object, Scope resolution operator, Friend Functions, Inline functions, Constructors and destructors, instantiation of objects, Types of Constructors, Static Class Data, Array of Objects, Constant member functions and Objects, Memory management Operators.

Module III: Inheritance: (6 Hours)

Inheritance, Types of Inheritance, access modes – public, private & protected, Abstract Classes, Ambiguity resolution using scope resolution operator and Virtual base class, Aggregation, composition vs classification hierarchies, Overriding inheritance methods, Constructors in derived classes, Nesting of Classes.

Module IV: Polymorphism: (6 Hours)

Polymorphism, Type of Polymorphism – Compile time and runtime, Function Overloading, Operator Overloading (Unary and Binary) Polymorphism by parameter, Pointer to objects, this pointer, Virtual Functions, pure virtual functions.

Module V: Strings, Files and Exception Handling: (5 Hours)

Manipulating strings, Streams and files handling, formatted and Unformatted Input output. Exception handling, Generic Programming – function template, class Template Standard Template Library: Standard Template Library, Overview of Standard Template Library, Containers, Algorithms, Iterators.

Course Outcomes:

At the end of this course, students will demonstrate ability to:

- To apply concepts of classes and objects in real world scenarios.
- Understand object-oriented programming features in C++,
- Apply these features to program design and implementation,
- Understand object-oriented concepts and how they are supported by C++,
- Gain some practical experience of C++.

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance

Text & References:

Text:

- A.R.Venugopal, Rajkumar, T. Ravishanker "Mastering C++", TMH, 1997
- R. Lafore, "Object Oriented Programming using C++", BPB Publications, 2004.
- "Object Oriented Programming with C++" By E. Balagurusamy.
- Schildt Herbert, "C++: The Complete Reference", Wiley DreamTech, 2005.

References:

- Parasons, "Object Oriented Programming with C++", BPB Publication, 1999.
- Steven C. Lawlor, "The Art of Programming Computer Science with C++", Vikas Publication, 2002.
- Yashwant Kanethkar, "Object Oriented Programming using C++", BPB, 2004

Annexure 2

APPLIED PHYSICS LAB- I

Course Code: PHY-121 **Credit Units: 01**

Total hours: 20

Course Objective:

To provide detailed introduction to the principal class of semiconductor andelectronics components

Course Contents:

Time allocated for experiments No.1-10 is 2 hours each.

1. To determine the forbidden band gap energy of a semiconductor.
2. To determine the frequency of AC mains using sonometer.
3. To determine the value of specific charge (ratio of e/m) of an electron by Thomson method.
4. To study the common base characteristics of a PNP junction transistor, by drawinginput characteristic curves andoutput characteristic curves.
5. To study the common emitter characteristics of a NPN junction transistor, by drawinginput characteristic curves andoutput characteristic curves.
6. To study a series /parallel resonant LCR circuit, its resonate frequency and quality factor
7. To study the voltage regulation characteristics of a zener diode.
8. To study the characteristics of a solar cell.
9. To draw V – I characteristics of a photocell and to verify the inverse square law of radiation.
10. To plot graph showing the variation of magnetic field with distance along the axis of a circular coil carrying current, and hence estimate the radius of the coil.
11. To draw the V-I characteristics of a forward and reverse bias PN junction diode.

Course Outcomes:

After completion of course student will develop: Practical understanding andapplications of fundamental concept of classical and modern Physics.

Examination Scheme:

Components	Att.	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

- Physics Practical, Gupta and Kumar

Annexure 2

BASIC ELECTRICAL ENGINEERING LAB

Course Code: ECE 121 **Credit Units: 01**

Total Hours: 20

Course Objective:
The objective of the course is to provide a brief knowledge of experimental study of Electrical Engineering to students of all disciplines. This Course includes some practical aspects related to flow of current, voltages, basic knowledge of Transformer, basic knowledge of electromagnetism, basic knowledge of electrical network.

Course Contents:
Lab Experiments are based on the course Basic Electrical Engineering (ECE 101)

List of experiments / demonstrations: (total 20 Hours with 2 Hours each experiment)

1. Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, multi-meter, oscilloscope. Real-life resistors, capacitors and inductors.
2. To verify KVL & KCL in the given network.
3. To verify Superposition Theorem.
4. To verify Maximum Power Transfer Theorem.
5. Demonstration of cut-out sections of machines: dc machine (commutator-brush arrangement), induction machine (squirrel cage rotor), synchronous machine (field winging - slip ring arrangement) and single-phase induction machine.
6. Torque Speed Characteristic of separately excited dc motor.
7. To determine R_{Th}, V_{Th}, R_N, I_N and verify Thevenin's and Norton's Theorem in a given network.
8. To perform open circuit & short circuit test on a single-phase transformer.
9. To study and draw the voltage vs frequency characteristics of the series and parallel resonance for given RLC Circuit
10. Demonstration of (a) dc-dc converters (b) dc-ac converters – PWM waveform (c) the use of dc-ac converter for speed control of an induction motor.

Laboratory Outcomes:

- Get an exposure to common electrical components and their ratings.
- Make electrical connections by wires of appropriate ratings.
- Understand the usage of common electrical measuring instruments.
- Understand the basic characteristics of transformers and electrical machines.
- Get an exposure to the working of power electronic converters.

Examination Scheme:

IA			EE			
Class Test (Practical Based)	**Mid Term Viva**	**Attendance**	**Major Experiment**	**Minor Experiment/ Spotting**	**Practical Record**	**Viva**
15	10	05	35	15	10	10

Note: IA –Internal Assessment, EE- External Exam

Annexure 2

OBJECT ORIENTED PROGRAMMING USING C++ LAB

Course Code: CSE 224 **Credit Units: 01**
Total Hours: 20

Course Objective:
To perform object oriented programming solution and develop solutions to problems demonstrating usage of control structure, modularity, classes, I/O and the scope of the class members.

SOFTWARE REQUIRED: TURBO C++

Course Contents :
Lab Experiments are based on the course Object Oriented Programming Using C++ (CSE 204)

Lab assignment will be based on the following:

1 [Classes and Objects] Write a program that uses a class where the member functions are defined inside a class. **(1 Hour)**
2 [Classes and Objects] Write a program that uses a class where the member functions are defined outside a class. **(1 Hour)**
3 [Classes and Objects] Write a Program to Demonstrate Inline functions. **(1 Hour)**
4 [Classes and Objects] Write a Program to Demonstrate Friend function, classes and this pointer. **(1 Hour)**
5 [Constructors and Destructors] Write a program to demonstrate the use of zero argument and parameterized constructors. **(2 Hours)**
6 [Operator Overloading] Write a program to demonstrate the overloading of increment and decrement operators. **(2 Hours)**
7 [Inheritance] Write a program to demonstrate the single inheritance. **(1 Hour)**
8 [Inheritance] Write a program to demonstrate the multiple inheritance. **(1 Hour)**
9 [Inheritance] Write a Program to demonstrate use of protected members, public & private protected classes, multilevel inheritance etc. **(1 Hour)**
10 [Polymorphism] Write a program to demonstrate the runtime polymorphism. **(1 Hour)**
11 [Exception Handling] Write a program to demonstrate the exception handling. **(2 Hours)**
12 [Templates and Generic Programming] Write a program to demonstrate the use of function template. **(2 Hours)**
13 [Templates and Generic Programming] Write a program to demonstrate the use of class template. **(2 Hours)**
14 [File Handling] Write a Program to Show how file management is done in C++. **(2 Hours)**

Course Outcomes:

At the end of this course, students will demonstrate ability to:

- knowledge of the structure and model of the C++ programming language, (knowledge)
- evaluate user requirements for software functionality required to decide whether the C++ programming language can meet user requirements (analysis)
- design the object-oriented programs for real world problems.

Examination Scheme:

IA			EE			
A	**PR**	**Practical Based Test**	**Major Experiment**	**Minor Experiment**	**Practical Record**	**Viva**
5	10	15	35	15	10	10

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

Text & References:

Text:

- A.R.Venugopal, Rajkumar, T. Ravishanker “Mastering C++”, TMH, 1997
- R. Lafore, “Object Oriented Programming using C++”, BPB Publications, 2004.
- “Object Oriented Programming with C++” By E. Balagurusamy.
- Schildt Herbert, “C++: The Complete Reference”, Wiley DreamTech, 2005.

References:

- Parasons, “Object Oriented Programming with C++”, BPB Publication, 1999.
- Steven C. Lawlor, “The Art of Programming Computer Science with C++”, Vikas Publication, 2002.
- Yashwant Kanethkar, “Object Oriented Programming using C++”, BPB, 2004

Annexure 2

COMMUNICATION SKILLS-II

Course Code: BCU 241 **Credit Units: 01**
Total Hours: 10

Course Objectives:

To understand the different aspects of communication using the four macro skills – LSRW (Listening, Speaking, Reading, Writing)

Prerequisites: NIL

<table>
<tr><td colspan="3">Course Contents / Syllabus:</td></tr>
<tr><td>1.</td><td>Module I Communication</td><td>35% Weightage</td></tr>
<tr><td></td><td>• Process and Importance
• Models of Communication (Linear & Shannon Weaver)
• Role and Purpose
• Types & Channels
• Communication Networks
• Principles & Barriers</td><td></td></tr>
<tr><td>2.</td><td>Module II Verbal Communication</td><td>25% Weightage</td></tr>
<tr><td></td><td>Oral Communication: Forms, Advantages & Disadvantages
Written Communication: Forms, Advantages & Disadvantages
Introduction of Communication Skills (Listening, Speaking, Reading, Writing)</td><td></td></tr>
<tr><td>3.</td><td>Module III Non-Verbal Communication</td><td>30% Weightage</td></tr>
<tr><td></td><td>• Principles & Significance of Nonverbal Communication
• KOPPACT (Kinesics, Oculesics, Proxemics, Para-Language, Artifacts, Chronemics, Tactilics)
• Visible Code</td><td></td></tr>
<tr><td>4.</td><td>Module IV : Prose</td><td>10% Weightage</td></tr>
<tr><td></td><td>TEXT: APJ Abdul Kalam and Arun Tiwari. Wings of Fire: An Autobiography, Universities Press, 2011
Comprehension Questions will be set in the End-Semester Exam</td><td></td></tr>
<tr><td>5.</td><td>Student Learning Outcomes:
The students should be able to :
• Apply Verbal and Non-Verbal Communication Techniques in the Professional Environment</td><td></td></tr>
<tr><td>6.</td><td colspan="2">Pedagogy for Course Delivery:
• Extempore
• Presentations
• Lectures</td></tr>
<tr><td>7.</td><td colspan="2">Assessment/ Examination Scheme:

<table><tr><th>Theory L/T (%)</th><th>Lab/Practical/Studio (%)</th><th>End Term Examination</th></tr><tr><td>100%</td><td>NA</td><td>50%</td></tr></table>
Theory Assessment (L&T):

<table><tr><th>Components (Drop down)</th><th>CIE</th><th>Mid Sem</th><th>Attendance</th><th>End Term Examination</th></tr><tr><td>Weightage (%)</td><td>10%</td><td>15%</td><td>5%</td><td>70%</td></tr></table></td></tr>
</table>

Text: *Rosenblum, M. How to Build Better Vocabulary, London: Bloomsbury Publication.*
Verma, Shalini. Word Power made Handy, S. Chand Publications.
High School English Grammar & Composition by Wren & Martin

Reference: *K.K.Sinha , Business Communication, Galgotia Publishing Company.*
Alan Pease : Body Language
Additional Reading: Newspapers and Journals

Annexure 2

ENVIRONMENTAL STUDIES – II

Course Code: EVS 242 **Credit Units: 02**

Total Hours: 20

Course Objectives:

- To understand various types of environmental pollution.
- To educate masses, in general and students, about the issues related to degradation of environment and social issues related to environment.
- To understand sustainable development.
- To understand environmental assets, local flora and fauna through field surveys.

Course Contents:

Module I: Environmental Pollution (7 Hours)
Definition, causes, effects and control measures of: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution. Solid waste management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management: floods, earthquake, cyclone and landslides.

Module II: Social Issues and the Environment (7 Hours)
From unsustainable to sustainable development, Urban problems and related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns Case studies. Environmental ethics: Issues and possible solutions

Climate change, Global warming, Acid rain, Ozone layer depletion, Nuclear Accidents and Holocaust case studies. Fireworks/Crackers – Introduction, ill effects on environment and humans.
Wasteland reclamation, Consumerism and waste products, Environmental Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act. issues involved in enforcement of environmental legislation Public awareness

Module III: Human Population and the Environment (4 Hours)
Population growth, variation among nations. Population explosion – Family Welfare Programmes

Environment and human health. Human Rights. Value Education. HIV / AIDS. Women and Child Welfare. Role of Information Technology in Environment and Human Health.

Case Studies

Module IV: Field Work (2 Hours)
Visit to a local area to document environmental assets-river / forest/ grassland/ hill/ mountain. Visit to a local polluted site – Urban / Rural / Industrial / Agricultural. Study of common plants, insects, birds. Study of simple ecosystems-pond, river, hill slopes, etc.

Course Outcomes:

Upon course completion, students will be able to:

- Explain various types of environmental pollutions.
- Understand role of individual in abatement of environmental pollution.
- Explain methods to mitigate disasters.
- Learn various environmental protection laws.
- Learn role of IT in environment and human health.

Examination Scheme:

Components	CT	HA	S/V/Q	A	ESE
Weightage (%)	15	5	5	5	70

Text & References:

- Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380 013, India, Email:mapin@icenet.net (R)
- Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
- Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopaedia, Jaico Publ. House, Mumbai, 1196p
- De A.K., Environmental Chemistry, Wiley Eastern Ltd. Down to Earth, Centre for Science and Environment (R)
- Gleick, H.P. 1993. Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
- Hawkins R.E., Encyclopaedia of Indian Natural History, Bombay Natural History Society, Bombay (R) Heywood, V.H & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
- Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p. McKinney, M.L. & School, R.M. 1996. Environmental Science Systems & Solutions, Web enhanced edition. 639p.
- Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB) Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p. Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
- Survey of the Environment, The Hindu (M)
- Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science
- Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)
- Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB) Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

Annexure 2

BEHAVIOURAL SCIENCE - II

Course Code: BSU 243 **Credit Units: 01**
Total Hours: 10

Course Objective:
This course aims at enabling students towards:

- Understand the importance of individual differences
- Better understanding of self in relation to society and nation
- Facilitation for a meaningful existence and adjustment in society
- Inculcating patriotism and national pride

Course Contents:

Module I: Individual differences & Personality (2 Hours)

- Personality: Definition& Relevance
- Importance of nature & nurture in Personality Development
- Importance and Recognition of Individual differences in Personality
- Accepting and Managing Individual differences
- Intuition, Judgment, Perception & Sensation (MBTI)
- BIG5 Factors

Module II: Managing Diversity (2 Hours)

- Defining Diversity
- Affirmation Action and Managing Diversity
- Increasing Diversity in Work Force
- Barriers and Challenges in Managing Diversity

Module III: Socialization (2 Hours)

- Nature of Socialization
- Social Interaction
- Interaction of Socialization Process
- Contributions to Society and Nation

Module IV: Patriotism and National Pride (2 Hours)

- Sense of pride and patriotism
- Importance of discipline and hard work
- Integrity and accountability

Module V: Human Rights, Values and Ethics (2 Hours)

- Meaning and Importance of human rights
- Human rights awareness
- Values and Ethics- Learning based on project work on Scriptures like- Ramayana, Mahabharata, Gita etc.

Student learning outcomes

- Student will be able to identify, understand, and apply contemporary theories of leadership to a wide range of situations and interactions
- Student will be able to understand and respect individual difference, so to enhance the relationship
- Learn social responsibility and develop a sense of citizenship
- Student will be able to identify and understand the impact of culture on one's leadership style

Examination Scheme:

Evaluation Components	Attendance	Journal of Success (JOS)	Social Awareness Program (SAP) SAP Report/SAP Presentation	End Semester Exam	Total
Weightage (%)	5	10	15	70	100

Suggested Readings:

- Davis, K. Organizational Behaviour,
- Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour
- Dressler, David and Cans, Donald: The Study of Human Interaction
- Lapiere, Richard. T – Social Change
- Lindzey, G. and Borgatta, E: Sociometric Measurement in the Handbook of Social Psychology, Addison – Welsley, US.
- Rose, G.: Oxford Textbook of Public Health, Vol.4, 1985.
- Robbins O.B.Stephen;. Organizational Behaviour

Annexure 2

FRENCH - II

Course Code: FLU244 **Credit Units: 02**

Total Hours: 20

Course Objective:

To furnish the linguistic tools

- to talk about daily activities and sports, to express necessities
- to talk about activities in recent future,
- to have conversations and perform day to day life tasks like enquiring about time, take an appointment
- to enquire about products and place orders in a shop/ restaurant

Course Contents:

Dossiers 3,4 – pg 25-44

Dossier 3 : Quelle journée ! Actes de Communication :

Parler de ses activités quotidiennes, se situer dans le temps, demander l'heure et la date, parler des sports et des
loisirs, exprimer la fréquence

Dossier 4 : Vous désirez ? Actes de Communication :

Exprimer la quantité, demander et donner le prix, exprimer la nécessité, la volonté et la capacité, comparer et
exprimer ses préférences, s'exprimer au futur proche, prendre rendez-vous, s'exprimer au restaurant/dans les magasins

Grammaire :

1. l'expression du temps
2. les articles contractés, les quantités indéterminées et déterminées
3. les adverbes de fréquences
4. verbes- faire, prendre, venir, pouvoir, vouloir, les verbes pronominaux
5. la comparaison de l'adjectif
6. la négation (suite)
7. le future proche

Examination Scheme:

	INTERNAL				EXTERNAL	GRAND TOTAL
Components	MID-SEM	VIVA-VOCE	ATTENDANCE	**TOTAL**	**END SEMESTER**	**100**
Weightage (%)	15	10	5	**30**	**70**	

Text & References:

Text:

Le livre à suivre:

· Andant, Christine et al. A propos A1 Livre de l'élève. Grenoble: Presses universitaires de Grenoble, 2010.

· Andant, Christine et al. A propos A1 Cahier d'exercices. Grenoble: Presses universitaires de Grenoble, 2010.

Références :

· Girardeau, Bruno et Nelly Mous. Réussir le DELF A1. Paris: Didier, 2010.

Annexure 2

ENGINEERING GRAPHICS & DESIGN LAB

Course Code: BME 123 **Credit Units: 01**

Total Hours: 20

Course Objective:

This course will provide students concepts on the drawings of different curves like straight line, parabola, ellipse etc. After completion of this course, students will be able to draw different figures manually and will be capable of using various instruments involved in drawings.

Course Contents:

List of experiments/ demonstrations:

Exp I: Practice of Letter writing

Exp II: Practice of Scales

Exp III: Practice of Conic Sections

Exp IV: Practice of Projection of Points

Exp V: Practice of Projection of Lines

Exp VI: Practice of Projection of Planes

Exp VII: Practice of Projection of Solids

Exp VIII: Practice of development of Surfaces

Exp IX: Practice of Isometric Projections

Exp X: Practice of Auto-Cad Commands

Laboratory Outcomes:

- Introduction to engineering design and its place in society
- Exposure to the visual aspects of engineering design
- Exposure to engineering graphics standards
- Exposure to solid modeling
- Exposure to computer-aided geometric design
- Exposure to creating working drawings
- Exposure to engineering communication

Examination Scheme:

Components	A	CT	S/V/Q/HA	EE
Weightage (%)	5	15	10	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance