BS1201 Engineering Mathematics-II

Teaching Scheme:
Lectures: 3 Hrs/Week  
Tutorial: 1 Hr /Week  
Credits: 4

Examination Scheme:
In-Semester: 50 Marks  
End-Semester: 50 Marks

Course Objectives:
Mathematics is a necessary path to scientific knowledge which opens new perspective of mental activity. Our aim is to provide sound knowledge of engineering mathematics to make the students think mathematically and strengthen their thinking power to analyse and solve engineering problems in their respective areas.

Course Outcomes:
Students will be able to

1. Solve first order first degree DE, apply it to model and solve simple engineering problems like R-C circuit, conduction of heat etc.
2. Apply Beta, Gamma, Error function and Leibnitz’s rule of DUIS to solve integration of univariate function
3. Identify the characteristics of the given function and trace the curve.
4. Integrate multivariate functions over the given region and apply the knowledge to find area, volume, mass, density etc.
5. Obtain Fourier series of given periodic function; Find nth harmonics for given data.

Course Contents:

Unit – I: First order first degree Differential Equation  
Definition, Order and degree of Differential Equation, Formation of differential equation, solutions of differential equation, Exact differential equation, Linear differential equation and equations reducible to these types.

Unit – II: Applications of Differential Equations  
Applications of differential equations to engineering problems: simple electrical circuits, applications of chemical engineering, applications of mechanical engineering and applications of physics.

Unit – III: Integral Calculus  
Unit – IV: Multiple Integrals (08)


Unit – V: Applications of Multiple Integrals (06)

Area of cartesian curves, Area of polar curves, Volume of solid, Mass of plane lamina, Mass of solid.

Unit – VI: Fourier Series and Harmonic Analysis (09)

Definition of Fourier series, Dirichlet’s conditions, full range Fourier series, half range Fourier Sine series, half range Fourier Cosine Series, Practical Harmonic analysis and applications to problems in Engineering.

Text Books:


Reference Books:


BS 1202 PHYSICS– II

Teaching Scheme:  
Lectures: 2Hrs/Week  
Tutorial: 1Hr/Week  
Credits: 3

Examination Scheme:  
In-Semester: 25 Marks  
End-Semester: 50 Marks

Course Objective:

The objective of this course is to provide an ‘algorithmic’ introduction of the basic principles of Quantum Physics to the first year students of engineering. Throughout the course, the applications of Quantum Physics will be discussed by emphasizing the laws of combining ‘probability amplitudes’. This will be done through several case studies and experimental situations.

Course Outcomes:

By taking this course, the learner will be able to –

1: **Apply** the laws of combining probability amplitudes for obtaining intensity distributions of ensembles of identical microscopic systems.

2: **Differentiate** between domain – specific nature of probability amplitudes in elementary quantum mechanical situations.

3: **Justify** the use of the laws of combining probability amplitudes in situations involving photons and two – state and multi – state quantum systems.

Unit – I: Probability Amplitudes: (4)

The laws for combining amplitudes; The two-slit interference patter; Scattering from a crystal

Unit – II: Identical Particles: (4)

Bose particles and Fermi particles; Case studies involving use of the exclusion principle

Unit – III: The Dependence of Amplitudes on Time: (4)

Stationary states; Potential energy and energy conservation; The precession of a spin-half particle

Unit – IV: The Hamiltonian Matrix: (4)

Resolving state vectors; How state changes with time; Hamiltonian Matrix

Unit – V: Two-state Systems and Single Qubit Logic Gates: (4)
Experiments with bullets, waves and electrons; The uncertainty principle

**Unit – VI: Band Theory of Solids and Semiconductor Physics:**

States for an electron in a lattice; Electrons and holes in semiconductors; The Hall effect; Rectification at a semiconductor junction; The transistor

**Text Book:**


**Reference Books:**

BS 1203 Chemistry - II

Teaching Scheme:

Lectures: 2 Hrs/Week
Tutorial: 1 Hr/Week
Credits: 3

Course Objectives:
The Chemistry course is designed for the learners to develop a sound background of fundamental concepts and principles relevant in the engineering context. The course facilitates undergraduates to evaluate the role of chemical substances in different methods of preparation and analysis. They analyze chemical processes related to engineering applications. Also the course inculcates basic problem solving skills involving chemistry principles.

Course Outcomes:
1: Understand different techniques of chemistry used in quantitative and qualitative analysis.
2: Comprehend chemical bonding in engineering materials along with their properties and applications.
3: Know methods of reducing corrosion.
4: Know application of phase rule for one and two-component systems.
5: Understand working of fossil fuels and scope of alternate/renewable ones.

Unit – I: Polymer Chemistry
Basic terms, molecular weight determination, types of polymerization and its mechanism (free radical and ionic), compounding of plastics, thermoplastic and thermoset polymers, Specialty polymers, Recycling of polymers.

Unit – II: Chemistry of fuels
Calorific value, Bomb & Boys' calorimeter, Proximate and Ultimate analysis of coal, Crude oil: refining, knocking, alternate fuels, rocket propellants, Reduction of carbon emission and carbon credit, Combustion: calculation of air required for combustion.

Unit – III: Nanomaterials
Introduction to nanomaterials, Synthesis by top down and bottom up methods, properties and typical applications of nanomaterials.
Unit – IV: Corrosion
Dry and wet corrosion mechanism, types, factors affecting corrosion, Protection against corrosion: Cathodic and anodic protection, powder coating, Metallic & non-metallic coating.

Unit – V: Instrumental methods of Analysis II
Basic principles, theory, instrumentation and applications of uv-visible spectrophotometry, chromatographic techniques (TLC, PC).

Unit – VI: Phase Rule
Gibbs Phase Rule, one Component system- Water system, Sulphur system, Two component alloy (Pb-silver system). Applications and limitations of phase rule.

Text Books:

Reference Books:
Teaching Scheme: Lectures: 3 Hrs/Week
Credits: 3

Pre-requisite: Semiconductor physics

Course Objectives:
1. To make students familiar with the fundamental concepts of AC circuits
2. To familiarize the students with three phase supply
3. To develop a clear understanding of operation and application of transformer
4. To make students familiar with Digital Circuits
5. To introduce Basics operational amplifier (IC 741) and its applications

Course Outcome:
Having successfully completed this course, the student will be able to:
1. Analyze and determine parameters of single phase AC circuit.
2. Quantify parameters of single phase transformer related to its operation and use.
3. Develop applications of logic gates for building combinational and sequential circuits.
5. Analyze characteristics of different power devices and transducers.

Unit I: AC Circuits
Behavior of pure R, L, C in ac circuits, Series and parallel RL, RC and RLC circuits, concept of Impedance and admittance, power triangle and power factor. Resonance in series and parallel RLC circuit, Three phase voltage generation and waveform, star and delta balanced systems. Relationship between phase and line quantities, phasor diagram, power in a three phase circuit.

Unit II: Single phase Transformers
1 Φ transformer: concept, types, working, ideal transformer, practical transformer, equivalent circuit, phasor diagram, efficiency and regulation calculations. Introduction to three phase transformer.

Unit III: Digital Electronics
Binary number systems and binary arithmetic, basic gates, implementation of basic gates using universal gates, Boolean algebra, standard representation of logic functions (SOP and POS forms), Introduction of Combinational logic circuits like multiplexer, demultiplexer, half adder and full adder, Introduction of Sequential logic circuits like flip-flops (SR, D), counters and shift registers.

Unit IV: OPAMP
Introduction to operational amplifiers, opamp configurations, modes and parameters, Negative feedback concept and applications like comparators, summing amplifiers, integrators and differentiators.
Unit V: POWER DEVICES
Construction, characteristics and turn on mechanism of SCR, two transistor analogy of SCR, concept of line and forced commutation. Introduction to phase control concept. Construction, characteristics of IGBT and MOSFET.

Unit VI: Transducers
Introduction to Transducers, selection of transducers, classification of transducers. Types of transducers such as LVDT, RTD, Thermistor and strain gauge.

Text Books:-

Reference Books:-


3. H.S. Kalsi “Electronic Instrumentation”, TMH publication, 2nd edition


ES 1202 Fundamentals of Programming Languages - II

Teaching Scheme: Practical: 1 Hr. / Week

Credits: 1

Course Objectives:
1. Understand role of functions and it’s utility in programming.
2. Understand the use of pointers in memory management.
3. Understand the utility of need and utility of user defined data types.
4. Learn and explore mobile application development environment.

Course Outcomes:
Student will be able to:
1) Write program using functions
2) Write code for effective memory management
3) Write code using appropriate user defined data types for various applications
4) Write code with user defined functions similar to inbuilt functions

Unit 1: Functions in C (03)
Concept of Function, Function declaration, Function definition, Function Call, Return statement, Passing parameters: Call by value, Recursion

Unit 2: Strings (02)
Introduction, Reading Strings, Writing Strings, Strings Operations: Counting characters in String, Converting into upper case and lower case, Concatenation, Appending, Comparing, Reverse

Unit 3: Introduction to Pointers in C (02)
Understanding Computer memory, Introduction to Pointers, Declaring pointer variable, Function Call by reference, Pointer and Arrays, Role of Pointers in Passing an Array to a Function, Pointers and Strings
Unit 4: Structures  
Introduction to Structures: Declaring Structure and Structure Variables, Initializing Structure, Accessing members of Structure

Unit 5: Unions, Enumeration Data types  
Declaring Union and its members, Accessing members of Union, Enumeration Types

Unit 6: Mobile application Development  

Text Books:

Reference Books:
ES 1203 Environmental Studies

Teaching Scheme:
Lectures: 2Hrs/Week
Tutorial: 1Hr/Week

Examination Scheme:
In-Semester: 25 Marks
End-Semester: 50 Marks

Credits: 3

Course Objectives:
1. It is an interdisciplinary approach to understand environment.
2. It enhances the ability to understand Environmental Problems.
3. Understand the relevance and importance of natural resources in the sustenance of life on earth and living standard.
4. To develop the ability and understand role of Individual in Environmental Protection

Course Outcomes:
A student should be able to obtain/develop:

1. Develop an understanding of environmental pollutions and hazards due to engineering/technological activities and general measures to control them.
2. Analyse the relationships between environmental laws across multiple sectors (local, state, national and international) Comprehend the importance of ecosystem and biodiversity.
3. Develop an understanding of different natural resources including renewable and non-renewable resources.
4. Identify suitable controlling measures for different types of solid wastes.
5. Improve fundamental knowledge of the inter-relationships between the built environment and natural environment.
6. Discuss an action plan for sustainable alternatives that integrate science, humanities and social perspective

Unit – I: Introduction

Concept of environment and multidisciplinary nature of environmental studies:

a) Definition of Environment, multidisciplinary nature of Environmental Studies, scope, importance of Environment, Public awareness for Environment
b) Concept, Ecosystem characteristics:-Biotic abiotic, functional attributes
c) Energy flow in ecosystem: - Universal and single channel energy flow model, Nutrient Cycling:- Nitrogen cycle, carbon cycle, phosphorus cycle,

d) Concept of biodiversity

Unit – II: Integrated built environment

a) Concept of integrated built environment – natural & man-made.
b) Eco-friendly materials in construction - Introduction, sources, Classification, properties and materials.

d) Building bye laws (concept):- Building line, control line, set back distance, F.S.I., Built up area.
e) Concept of green building, advantages of green building, Introduction LEED rating system.

Unit – III: Renewable and Non-Renewable resources and it’s Conservation

a) Natural resources: Types of Renewable- Forest, water - causes of depletion, Conservation
b) Non-renewable resources, types, method of harnessing energy

Unit – IV: Environmental Pollution

a) Introduction, Classification of pollution - Air and water - sources, causes, effects & remedial measures.
b) Solid waste generation, Collection of solid wastes, processing techniques, E- waste generation and methods of disposal.
c) Role of an individual in prevention of pollution.

Unit – V: Social Issues and Environment

a) Unsustainable to sustainable development, urban problems related to energy, Climate change, global warming, acid rain, ozone layer depletion
b) Water conservation and Rain water harvesting
c) Introduction to Environmental Impact Assessment - Definition, introduction of methods with the help of a case study
d) Environment Protection Act, Forest Conservation Act, Public awareness.
Unit – VI: Smart City

Concept and features of smart city, challenges of urbanization, selection process, strategy

Text books:


Reference books:

2. Dr. J.P. Sharma, ‘Environmental Studies’,University Science Press.
   New Age International Publishers.
5. Shah, Kale, Patki, ‘Building planning and Built environment’,
   Tata McGraw Hill
6. Bukhootsow, ‘Energy policy and planning’ ,B- Prentice Hall of India New Delhi
ES1204 Engineering Graphics

Teaching Scheme:
Lectures: 2 Hrs/Week
Credits: 2

Examination Scheme:
In-Semester: 25 Marks
End-Semester: 25 Marks

Course Objectives:
1. To apply theory of projections and standard conventions in engineering drawing.
2. To understand the methods to draw various engineering curves.
3. To develop the visualization and interpretation skills, for the physical objects.
4. To develop free hand sketching skills.

Course Outcomes:
After completing the course students will be able to draw
1. Orthographic projections of an object.
2. Engineering curves by applying the given method.
3. Isometric views and development of surfaces of the given object.

Unit – I: Introduction to Engineering Drawing (02)
Layout and sizes of drawing sheets, drawing instruments, types of lines used in drawing practice, dimensioning systems, representation of tolerances, standard codes by B.I.S (SP-46).

Unit – II: Curves in Engineering Practice (05)
Construction of ellipse, parabola, hyperbola, involute, cycloid, archimedean spiral, helix on cone and cylinder.

Unit – III: Orthographic Projections (08)
Theory of projections, methods of obtaining orthographic views, sectional orthographic projections.

Unit – IV: Isometric Projections (08)
Isometric axes, Isometric scale, isometric projections and views, construction of isometric view from given orthographic views.
Unit – V: Development of lateral surfaces of solids

Parallel line development, radial line development, methods to transfer points for development of prisms, pyramids, cylinder and cone.

Unit – VI: Free hand sketching

Free hand sketching of front view and/or top view of standard machine elements – thread forms, hexagonal headed bolt and nut, screws, shaft and keys, spring, welded and riveted joint.

Text Books:


Reference Books:


BS 1204 Physics Chemistry Lab – II

**Teaching Scheme:**

Lectures: 2Hrs/Week

Tutorial: 1Hr/Week

Practical: 2 Hrs/Week

Credits: 1

**Examination Scheme:**

In-Semester: 25 Marks

End-Semester: 50 Marks

1: **Record** the observations as per the least counts of measuring instruments and carry out plotting and necessary calculations pertaining to solid state physics, atomic and molecular system.

2: **Analyze** the plotted data and experimental findings with the corresponding theoretical physical models pertaining to solid state physics, atomic and molecular system.

3: **Analyze** the sources of error and arrive at conclusions pertaining to the behavior of solid state physics, atomic and molecular system.

4: **Determine** the molecular weight of a given polymer by viscometry.

5: **Evaluate** a solid fuel sample for its quality by proximate analysis.

6: **Implement** spectral analysis for a given chemical compound.

**List of Experiments:**

**Physics**

1. Michelson Interferometer
2. Specific heat of substance
3. Hall Effect
4. Balmer Series and Emission Spectra
5. Zeeman Effect (Demo)

**Chemistry**

1. Qualitative & quantitative Analysis of alkali /alkaline earth metals using Flame Photometry.
2. Colorimetric verification of Beer-Lambert's law.
ES 1205 Basic Electronics and Electrical Engineering Lab- II

Teaching Scheme:
Laboratory: 2 Hrs/Week

Credits: 1

Pre-requisite: Instruments, Electronics and electrical components, semiconductor physics.

Course Objectives:
1. To make students familiar with the fundamental concepts of single phase AC circuits
2. To make students familiar with three phase supply
3. To demonstrate working of single phase transformer
4. To explain combinational logic circuits
5. To introduce Basics operational amplifier (IC 741) and its applications

Course Outcome:
Having successfully completed this course, the student will be able to:
1. Apply fundamental concepts of single phase and three phase AC circuits.
2. Test performance parameters of single phase transformers.
3. Implement basic analog and digital circuits.
4. Verify characteristics of SCR and transducer.

List of Practicals:
1. Performance analysis of L-C-R series circuit.
2. Load test on single phase transformer for determination of voltage regulation.
4. Analysis of summing amplifier and difference amplifier using OPAMP.
5. Design and implementation of half adder and full adder circuits.
6. Illustrate effect of variation of displacement on output voltage of LVDT.
7. Verification of static characteristics of SCR.
8. Soldering Techniques (any small circuit like clippers, clamper, circuits using basic gates).
ES 1206 Fundamentals of Programming Language Lab- II

Teaching Scheme:
Practical: 2 Hrs/Week
Credits: 1

Examination Scheme:
Practical: 25 Marks

Course Objectives:
1. Learn and acquire art of computer programming.
2. Learn advanced C programming features.
3. Learn to write C program for a given logical solution.
4. Learn to apply programming concepts to solve simple problems using arrays, functions and structures.

Course Outcomes:
Student will be able to:
1. Write program using functions for given problem statement.
2. Write code using sequential memory management.
3. Apply appropriate user defined data types for given statement.
4. Write program with user defined functions similar to library functions.

Section 1 (any 07 assignments)
1. Write a C program to swap 2 integers using user defined functions (call by value, call by reference).
2. Write a program in C to compute the factorial of the given positive integer using recursive function.
3. Write functions to convert feet to inches, convert inches to centimeters, and convert centimeters to meters. Write a program that prompts a user for a measurement in feet and converts and outputs this value in meters. Facts to use: 1 ft = 12 inches, 1 inch = 2.54 cm, 100 cm = 1 meter.
4. Write a menu driven program to perform following operations using Array of integers like (accept, display, print alternate number, sum of all numbers, search a number).
5. Write a program in C to sort n integers using bubble sort.
6. Write a menu driven program to perform string operations using library functions.
7. Write a menu driven program to perform string operations using user defined functions.
8. Define an integer pointer array of 10 integers. Initialize them to any integer values from the keyboard. Find the sum, average, minimum, and maximum of these 10 integers. Sort the 10 integers in descending order.

9. Write a program in C to compute addition / subtraction / multiplication of two matrices.
   Use functions to read, display and add / subtract / multiply the matrices.

10. For a class an examination is conducted and the results for the students of all the 5 subjects are recorded. Write C program to display the record of students. On the basis of the record compute:
    i. The average score of class
    ii. Highest score and lowest score of class
    iii. Marks scored by most of the students
    iv. List of students who were absent for the test

11. Write a menu-based program in C that uses a set of functions to perform the following operations:
    i. reading a complex number
    ii. writing a complex number
    iii. addition of two complex numbers
    iv. subtraction of two complex numbers
    v. multiplication of two complex numbers
    vi. Represent the complex number using a structure.

12. Write a C program to create an employee database using structure and perform operations such as accept, display, search by name, search by number, update a record.

Section 2 (any 02 assignments)

1. A string is provided from the user. Calculate the total number of characters in the string and the total number of vowels in the string with the number of occurrence in the string.

2. College library has n books. Write C program to store the cost of books in array in ascending order. Books are to be arranged in descending order of their cost.

3. Write a recursive function to obtain the first 25 numbers of a Fibonacci sequence. In a Fibonacci sequence the sum of two successive terms gives the third term. Following are the first few terms of the Fibonacci sequence: 1 1 2 3 5 8 13 21 34 55 89.

4. A factory has 3 division and stocks 4 categories of products. An inventory table is updated for each division and for each product as they are received. There are three independent suppliers of products to the factory:
   (a) Design a data format to represent each transaction.
   (b) Write a program to take a transaction and update the inventory.
(c) If the cost per item is also given write a program to calculate the total inventory values.

5. Write a program that compares two given dates. To store date use structure say date that contains three members namely date, month and year. If the dates are equal then display message as "Equal" otherwise "Unequal".

6. Create a structure to specify data of customers in a bank. The data to be stored is: Account number, Name, Balance in account. Assume maximum of 200 customers in the bank.
(a) Write a function to print the Account number and name of each customer with balance below Rs. 100.
(b) If a customer request for withdrawal or deposit, it is given in the form: Acct. no, amount, code (1 for deposit, 0 for withdrawal)
Write a program to give a message, “The balance is insufficient for the specified withdrawal”.

7. An automobile company has serial number for engine parts starting from AA0 to FF9. The other characteristics of parts to be specified in a structure are: Year of manufacture, material and quantity manufactured.

Section 3 (study assignment)

Students should design and develop a small Android application for mobile.
ES1207 Engineering Graphics Lab

Teaching Scheme:
Practical: 2 Hrs/Week
Credits: 1

Examination Scheme:
Practical: 25 Marks

Course Objectives:
Students will be able to

1. Apply theory of projections and standard conventions in engineering drawing.
2. Understand the methods to draw various engineering curves.
3. Develop the visualization and interpretation skills for the physical objects.
4. Develop free hand sketching skills.

Course Outcomes:
After completing the course students will be able to

Identify applications of engineering curves and draw the curves.
Understand and draw orthographic projections and isometric views of an object.
Draw the development of lateral surfaces of solids.
Create free hand sketches of the machine elements.

I: Introduction to Engineering Drawing (01)
   Drawing sheet layouts, drawing instruments, standard codes by B.I.S (SP-46)

II: Assignments and Drawing Sheets (12)
   • Engineering Curves.
   • Orthographic Projections
   • Isometric Projections
   • Development of surfaces of solids.
   • Free hand sketching.

III: Introduction to computer aided drafting package (02)
   Features and applications of computer aided drafting packages, basic operations, and various
   commands for drawing, dimensioning, editing, saving and plotting the drawings.
ES 1208 Workshop Practice I

Teaching Scheme: Practical: 2 Hr/Week
Credit: 1

Examination Scheme: Practical/Oral Examination: 25 marks

Course Objectives:
1. To provide knowledge and skill to use tools, machines, equipment, and measuring instruments, which are used in manufacturing industries.
2. To educate students for Safe handling of machines and tools in manufacturing environment.

Course Outcomes:
1. The student will be able to apply concept related to workshop safety & use of measuring instruments during process of manufacturing.
2. The student will be able suitably select basic manufacturing practices for making of component.
3. The students will be able to manufacture/produce given product from raw material using different manufacturing methods.

Unit – I: Introduction to Workshop Safety and Measuring Instruments:
- Safety precautions while working in shop, safety equipment’s and their use.
- Brief introduction to instruments like – Steel rule, Calipers, Vernier Caliper, Micrometer, etc. Least counts, common errors and care while using them, use of marking gauge, ‘V’ block and surface plate.
- Introduction & working of different tools used in workshop.

Unit – II: Manufacturing Practice: (Any Two Trades)
- Fitting: Preparation of joints, markings, cutting and filling for making joints like V or T for making part of any component.
- Carpentry: Wood working consists of planning, marking, sawing, chiseling and grooving to make joint like lap, T, dovetail.
- Tin smithy: Making of small parts using sheet metal such as Tray, Funnel.
- Welding Joints: Introduction to use of MIG/ TIG, arc welding for making joints like Lap, Butt joint.

Unit – III: Information technology:
- Identify the peripherals of computer components in a CPU and its functions
- Disassemble and assemble the PC back to working condition
- Loading of operating system.

Unit – IV: Plumbing
- Hands on practice on Cutting, bending and external threading of GI pipes using Die
- Plumbing on PVC pipes.
- Different Joint preparation on GI & PVC Pipes

Text Books:

Basic Sciences and Humanities Page 22

Reference Books:

NC 1201 Value Education

Teaching Scheme:  
Lectures: 1 Hr /Week  
Tutorial: Nil  
Credits: Nil

Examination Scheme:  
In-Semester: Nil  
End-Semester: Nil

Course Objectives:

1. To make understand importance of values in human behavior.  
2. To understand adjustments required in one self and others to uphold values in society.  
3. To understand importance of values in Family Life.  
4. To understand ethics required by professionals in work place.

Course Outcomes:

1. Students will appreciate importance of values in all walks of life.  
2. To develop women professional with strong ethics and above all be a good human being.  
3. To help students to develop their own value system and action plan based on it.  
4. To understand the impact of the Moral role of students in nation building and being a responsible citizen.  
5. Understand effects of Global issue like Terrorism, Environment, different cultures etc.

Unit – I: Values and Self Development  (03)  
Value Education – Definition - relevance to present day - Concept of Human Values - self introspection - Self esteem.

Unit – II: Family values  (03)  
Components, structure and responsibilities of family - Neutralization of anger - Adjustability-Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

Unit – III: Ethical values  (03)  
Unit – IV: Social values
Faith, service and secularism - Social sense and commitment -Students and Politics -Social awareness, Consumer awareness, Consumer rights and responsibilities - Redressal mechanisms

Unit – V: Effect of international affairs on values of life/ Issue of Globalization
Modern warfare -Terrorism. Environmental issues - mutual respect of different cultures, religions and their beliefs.

Text Books:


Reference Books: