

### 3.3 DIGITALELECTRONICS

<b>L</b>	<b>P</b>
<b>3</b>	<b>2</b>

#### RATIONALE

This course has been designed to make the students know about the fundamental principles of digital electronics and gain familiarity with the available IC chips. This subject aims to give a background in the broad field of digital systems design.

#### LEARNING OUTCOMES

After undergoing the subject, student will be able to:

- Verify and interpret truth tables for all logic gates.
- Realize all logic functions with AND, OR, NOT, NAND and NOR gates •  
Design half adder and full adder circuit
- Demonstrate and design 4-bit adder, 2's complement subtractor •  
Verify and interpret truth tables for all flip flops.
- Verify and interpret truth tables of multiplexer, de-multiplexer, encoder and decoder ICs
- Design a four-bit ring counter and verify its operation •  
Design 4-bit SISO, PISO, SIPO, PIPO shift registers

#### DETAILED CONTENTS

1. Introduction (02hrs)
  - a) Distinction between analog and digital signal.
  - b) Applications and advantages of digital signals.
2. Number System (04hrs)
  - a) Binary, octal and hexadecimal number system: conversion from decimal and hexadecimal to binary and vice-versa.
  - b) Binary addition, subtraction, multiplication and division including binary points. Sign magnitude method of representation, 1's and 2's complement method of addition/subtraction, floating point representation
3. Codes and Parity (04hrs)
  - a) Concept of code, weighted and non-weighted codes, examples of BCD, excess-3 and Gray code.
  - b) Concept of parity, single and double parity and error detection and correction (Hamming code)
  - c) Alphanumeric codes: ASCII, EBCDIC and Unicode.

4. LogicGates (06hrs)
- Conceptofnegativeand positive logic
  - Definition, symbols and truth tables of gates. Construction of NOT, AND and OR gates from NAND and NOR gates (universal gates).
5. LogicSimplification (05hrs)
- Postulates of Boolean algebra, De Morgan's Theorems. Various identities. FormulationoftruthtableandBooleanequationforsimpleproblem. Implementation of Boolean (logic) equation with gates
  - Karnaughmap(upto4variables)andsimpleapplicationindeveloping combinational logic circuits
6. Arithmeticcircuits (05hrs)
- HalfadderandFulladdercircuit,designandimplementation.
  - Halfand Fullsubtractor circuit,designand implementation.
  - 4 bit adder/subtractor.
  - AdderandsubtractorIC(7484)
  - 2-bitcomparator
7. Decoders,MultiplexersandDe-Multiplexers (06hrs)
- Basicfunctionsandblockdiagramof Encodersanddecoders.
  - BasicfunctionsandblockdiagramofMultiplexersandDe-Multiplexers.Different types and ICs.
  - Fourbitdecodercircuitsfor7segmentdisplayanddecoder/driverICs.
8. Latchesandflipflops (04hrs)
- Conceptandtypesoflatchwiththeir workingandapplications
  - Operation using waveforms and truth tables of RS, T, D, JK and Master/Slave JK flip flops.
  - Differencebetweenalatchandaflipflop
  - FlipflopICs
9. ShiftRegister (06hrs)
- Introductionandbasicconceptsincludingshiftleftandshiftright.
- Serialinparallelout,serialinserialout,parallelinserialout,parallelin parallel out.
  - Universalshift register

- c) Buffer register, Tristate Buffer register
  - d) IC 7495
10. Counters (03hrs)
- a) Introduction to Asynchronous and Synchronous counters
  - b) Binary up/down counters (upto MOD-8)
  - c) Decade counter.
  - d) Presettable and programmable counters
  - e) Ring counter with timing diagram
  - f) Counter ICs

### LIST OF PRACTICALS

1. Verification and interpretation of truth tables for AND, OR, NOT NAND, NOR and Exclusive OR (EXOR) and Exclusive NOR (EXNOR) gates
2. - Realisation of logic functions with the help of NAND or NOR gates
  - Design of a NOR gate latch and verification of its operation
3. - To design a half adder using XOR and NAND gates and verification of its operation
  - Construction of a full adder circuit using XOR and NAND gates and verify its operation
4. To design 4 bit adder, 2's complement subtractor circuit using an 4 bit adder IC and an XOR IC and verify the operation of the circuit.
5. To design a NOR Gate Latch and verification of its operation
6. Verification of truth table for positive edge triggered, negative edge triggered, level triggered IC flip-flops (At least one IC each of D latch, D flip-flop, JK flip-flops).
7. Verification of truth table for encoder and decoder ICs, Mux and DeMux
8. To design a 4 bit SISO, SIPO, PISO, PIPO shift registers using JK/D flip flops and verification of their operation.
9. To design a 4 bit ring counter and verify its operation.

**Note: Above experiments may preferably be done on Bread Boards.**

## INSTRUCTIONAL STRATEGY

The digital systems in microprocessors have significant importance in the area of electronics. Adequate competency needs to be developed by giving sufficient practical knowledge in microprocessors (programming as well as interfacing), A/D, D/A Converters and other topics. Help may be taken in the form of charts, simulation packages to develop clear concepts of the subject. Programming exercises other than the tested in circulation may be given to the students.

## RECOMMENDED BOOKS

1. Malvino Leach, "Digital Electronics and Applications" Tata McGraw Hill Education Pvt Ltd, New Delhi
2. Morris Mano, "Digital Logic Designs" Prentice Hall of India, New Delhi
3. Floyd and Jains, "Digital Fundamentals", Pearson Education
4. KS Jamwal, "Digital Electronics" Dhanpat Rai and Co., New Delhi
5. R.J. Tocci, "Digital Systems: Principles and Applications" Prentice Hall of India, New Delhi

## SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allocation (Out of 50)
1.	2	2
2.	4	5
3.	4	5
4.	6	8
5.	5	5
6.	5	5
7.	6	6
8.	4	4
9	6	6
10.	3	4
<b>Total</b>	<b>45</b>	<b>50</b>

## COMPUTER PROGRAMMING USING C

<b>L</b>	<b>P</b>
<b>3</b>	<b>4</b>

### RATIONALE

Computers play a vital role in present day life, more so, in the professional life of technician engineers. People working in the field of computer industry, use computers in solving problems more easily and effectively. In order to enable the students use the computers effectively in problem solving, this course offers the modern programming language C along with exposition to various applications of computers. The knowledge of C language will be reinforced by the practical exercises.

### LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Identify the problem and formulate an algorithm for it. ●  
Identify various control structures and implement them. ●  
Identify various types of variables.
- Use pointer in an array and structure.
- Use structures and union for handling data.
- Explain the concepts of C programming language
- Explain and implement the language constructs concepts
- Install C software on the system and debug the programme
- Explain and execute member functions of C in the programme ●  
Describe and implement array concept in C programme
- Describe and execute pointers ●  
Handle file with C

### DETAILED CONTENTS

1. Algorithm and Programming Development (02hrs)

Overview of computer language and Operating systems –Machine level language, assembly level language, high level language, assembler, compiler and interpreter  
Steps in development of a program  
Flowcharts, Algorithm development  
Programme Debugging

2. ProgramStructure (08hrs)
- I/Ostatements,assignstatements
  - Constants,variablesand datatypes
  - Operatorsand Expressions
  - Standardsand Formatted
  - Data Type Casting
3. ControlStructures (08hrs)
- Introduction
  - Decisionmakingwith IF–statement
  - IF–ElseandNestedIF
  - Whileanddo-while,forloop
  - Break.Continue,gotoandswitchstatements
4. Functions (08hrs)
- Introductionto functions
  - GlobalandLocal Variables
  - FunctionDeclaration
  - Standardfunctions
  - ParametersandParameterPassing
  - Call -byvalue/reference
5. Arrays (06hrs)
- Introductionto Arrays
  - ArrayDeclaration,Lengthofarray
  - SingleandMultidimensionalArray.
  - Arraysofcharacters
  - Passingan arraytofunction
6. Pointers,StructuresandUnions (07hrs)
- Introductionto Pointers
  - Declarationof structures
  - Accessingstructure members
  - Structure Initialization
  - Unions
7. FileHandlingwithC (06hrs)
- IntroductiontoFiles(streamsinC)
  - File:FileDeclaring,FileOpening, FileClosing
  - OperationsonFile: Readingon File,Writing onFile,Appendingonfile
  - RandomAccessof a file
  - Commandlineargument.

## LIST OF PRACTICALS

1. Programming exercises on executing and editing a C program.
2. Programming exercises on defining variables and assigning values to variables.
3. Programming exercises on arithmetic and relational operators.
4. Programming exercises on arithmetic expressions and their evaluation.
5. Programming exercises on formatting input/output using print and scanf and their return type values.
6. Programming exercises using if statement.
7. Programming exercises using if-Else.
8. Programming exercises on switch statement.
9. Programming exercises on do-while, statement.
10. Programming exercises on for- statement.
11. Program on one-dimensional array.
12. Program on two-dimensional array.
13. (i) Programs for putting two strings together.  
(ii) Programs for comparing two strings.
14. Simple programs using structures.
15. Simple programs using pointers.
16. Simple programs using union.
17. Write a program to apply open, close and save operations on a file to be performed on C file.
18. Program to perform write and read operations in file.

## INSTRUCTIONAL STRATEGY

The subject is totally practical based. Students should be given clear idea about the basic concepts of programming. In practical session students should be asked to draw flowchart write algorithm and then write program for the algorithm and run on computer. It is required that students should maintain records (files with printouts).

## RECOMMENDED BOOKS

1. Kanetkar, Yashwant, "Let us C" BPB Publication, New Delhi
2. Balaguruswami, E, "Programming in ANSI C", Tata McGraw Hill Education Pvt. Ltd. New Delhi.
3. Salaria, RS "Problem Solving and Programming in C", Khanna Book Publishing Co (P) Ltd. New Delhi.
4. Gottfried, "Programming in C", Schaum Series, Tata McGraw Hill Education Pvt. Ltd., New Delhi.
5. Subburaj, R, "Programming in C", Vikas Publishing House Pvt. Ltd., Jangpura, New Delhi.

**SUGGESTED DISTRIBUTION OF MARKS**

<b>TopicNo.</b>	<b>TimeAllotted(Hrs)</b>	<b>Marks Allotted (Outof50)</b>
1	02	02
2	08	09
3	08	09
4	08	09
5	06	06
6	07	09
7	06	06
<b>Total</b>	<b>45</b>	<b>50</b>



## **DATABASEMANAGEMENTSYSTEM**

**L P**  
**3 4**

### **RATIONALE**

Database and database systems have become an essential component of everyday life in modern society. This course will acquaint the students with the knowledge of fundamental concepts of DBMS and its application in different areas, storage, manipulation and retrieval of data using query languages. Oracle/My SQL/SQL Server can be use as package to explain concepts.

### **LEARNINGOUTCOMES**

After undergoing the subject, the students will be able to:

- Define and describe the database
- Contrast and compare the design of database architecture
- Convert and compare the designs and differentiate between the keys ●  
Convert database in the form of tables
- Normalized the data
- Provide the security to the database
- Respond various queries in the SQL

### **DETAILED CONTENTS**

1. Introduction (04hrs)

Database Systems; Database and its purpose, Characteristics of the database approach, Advantages and disadvantages of database systems. Classification of DBMS Users; Actors on the scene, Database Administrators, Database Designers, End Users, System Analysts and Application Programmers, Workers behind the scene (DBMS system designers and implementers, tool developers, operator and maintenance personnel)

2. Database System Concepts and Architecture (05hrs)

Data models, schemas, instances, data base state. DBMS Architecture; The External level, The conceptual level, The internal level, Mappings. Data Independence; Logical data Independence, Physical data Independence. Database Languages and Interfaces; DBMS Language, DBMS Interfaces. Classification of Database Management Systems

3. Data Modeling using E.R. Model (Entity Relationship Model) (06hrs)  
Data Models Classification; File based or primitive models, traditional data models, semantic data models. Entities and Attributes, Entity types and Entity sets, Relationship among entities
4. Relational Model: (05hrs)  
Relational Model Concepts: Domain, Attributes, Tuples and Relations. Relational constraints and relational database schemes; Domain constraints, Key constraints and constraints on Null. Relational databases and relational database schemes, Entity integrity, referential integrity and foreign key
5. Normalization (05hrs)  
Non-loss decomposition and functional dependencies, First, Second and Third normal forms, Boyce/Codd normal form, denormalization
6. Database Access and Security (06hrs)  
Database security, process controls, database protection, grant and revoke
7. MYSQL/SQL (Structured Query Language) (14hrs)  
SQL\* DDL (Data Definition Languages): Creating Tables, Creating a table with data from another table, Inserting values into a table, updating columns of a Table, Deleting Rows, Dropping a Table. DML (Data Manipulation Language): Database Security and Privileges, Grant and Revoke Command, Maintaining Database Objects, Commit and Rollback, various types of select commands, various types of joins, sub query, aggregate functions.

### **LIST OF PRACTICALS**

1. Exercises on creation and modification of structure of tables.
2. Exercises on inserting and deleting values from tables.
3. Exercises on querying the table (using select command).
4. Exercises on using various types of joins.
5. Exercises on using functions provided by database package.
6. Exercises on commands like Grant, Revoke, Commit and Rollback etc.
7. Design of database for any application.

## INSTRUCTIONAL STRATEGY

Explanation of concepts using real time examples, diagrams etc. For practical sessions books along with CDs or learning materials with specified activities are required. Various exercises and small applications should be given along with theoretical explanation of concepts.

## RECOMMENDED BOOKS

- 1) Vig, Dr. Renu, and Ekta Walia, "Fundamentals of Database Management Systems", an ISTE, Publication, New Delhi.
- 2) ISRD Group, "Introduction to DBMS", Tata McGraw Hill Education Pvt Ltd, New Delhi.
- 3) Wesley, Date C.J. Addison, "An Introduction to Database Systems"
- 4) Elmasri, Navathe, Addison Wesley, "Fundamentals of Database Systems"
- 5) Desai, Bipin C., "An Introduction to Database Systems", Galgotia Publications Pvt. Ltd., Daryaganj, New Delhi 110002.

## SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	04	4
2	05	6
3	06	8
4	05	5
5	05	5
6	06	6
7	14	16
<b>Total</b>	<b>45</b>	<b>50</b>

## OPERATING SYSTEMS

<b>L</b>	<b>P</b>
<b>3</b>	<b>2</b>

### RATIONALE

The course provides the students with an understanding of human computer interface existing in computer system and the basic concepts of operating system and its working. The students will also get hands-on experience and good working knowledge to work in windows and Linux environments. The aim is to gain proficiency in using various operating systems after undergoing this course. While imparting instructions, the teachers are expected to lay more emphasis on concepts and principles of operating systems, its features and practical utility.

### LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Identify memory management technique. •  
Differentiate scheduler algorithm.
- Setup of Linux labs.
- Use Linux for running various programming languages •  
Set up open source labs.
- Describe and identify various filesystem. •  
Assist in handling other open sources

### DETAILED CONTENTS

1. Overview of Operating Systems (03hrs)  
 Definition of Operating Systems, Types of Operating Systems – Distributed OS and Network OS, Importance of Operating Systems, Functions of Operating Systems
2. Process Management (04hrs)  
 Process Concepts, Process Control block, Process State Diagram, Operations on Processes, Inter Process Communication, Process synchronization and semaphores
3. CPU Scheduling (04hrs)  
 Basic Concepts, Scheduling Queues, Schedulers, Scheduling Criteria, Scheduling Algorithms and their evaluation
4. Deadlock (05hrs)  
 Deadlock model, Characterization, Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection and recovery

5. MemoryManagement (05hrs)  
Basic Concepts, Logical vs Physical address space, Swapping, Paging and segmentation, Virtual Memory and demand paging
6. InputOutput Management (04hrs)  
Dedicated andshareddevices,Inputoutputdevicesandstorage devices,
7. FileSystem Management (04 hrs)  
File Concepts, Access methods, File Structure, Allocation methods and free space management
8. LinuxOperatingSystem (16hrs)  
Introduction, history of Linux, Linux Overview, Structure of Linux, Linux releases, open linux, system requirements, file structures, Linux Commands and Filters:Shell:conceptsofcommandoptions,input, outputredirectingand network file, process and communication commands like: mkdir, cd, ls, who, whoami, cat, more, tail, head, mv, chmod, grep, wc, sort,kill, write, wall, mail, news

### **LIST OF PRACTICALS**

1. Directorycommands
2. Filecommands
3. Processmanagement
4. Usingfilepermission commands
5. Mailcommands
6. EstablishmentofLANnetworkforhomogeneousandheterogeneous systems through DHCP.

### **INSTRUCTIONAL STRATEGY**

This subject is both theory and practical oriented. Therefore, stress must be given on particulars along with theory. Laboratory must have windows as well as Linux operating system. Concepts of O.S. must be taught practically.

**RECOMMENDED BOOKS**

1. Operating Systems by Achyut S Godbole and Atul Kahate: Tata McGraw Hill Education Pvt Ltd , New Delhi
2. Linux –The Complete Reference by Richard Peterson, Tata McGraw Hill, New Delhi
3. Operating Systems by Stallings Tata McGraw Hill.
4. Operating Systems- A Concept Based Approach by Dham Dhare, Tata McGraw Hill Education Pvt Ltd , New Delhi
5. Operating System Concepts by Ekta Walia, Khanna Publishers, New Delhi.

**SUGGESTED DISTRIBUTION OF MARKS**

<b>Topic No.</b>	<b>Time Allotted (Hrs)</b>	<b>Marks Allotted (Out of 50)</b>
1.	03	03
2.	04	04
3.	04	05
4	05	06
5	05	06
6	04	05
7	04	05
8	16	16
<b>Total</b>	<b>45</b>	<b>50</b>

## INTERNETANDWEBTECHNOLOGIES

<b>L</b>	<b>P</b>
<b>2</b>	<b>4</b>

### RATIONALE

This course will enable the students to understand the basics of internet and various application of internet like e-mail, FTP, Telnet, Newsgroups and video conferencing. In addition, this course develops competency amongst the students to design professional web sites and interactive web pages. They will have overview of different technologies like of HTML, CSS, JavaScript.

### LEARNINGOUTCOMES

After undergoing the subject, the students will be able to:

- Define internet and its operation. ●  
Outline application of internet.
- Use application of video conferencing ●  
Use application of E-communication
- Describe the application of E-communication and benefit to society. ●  
Define and differentiate between various web browsers.
- Develop static webpage/webportal. ●  
Validate input data.

### DETAILED CONTENTS

1. Internet Basics (06hrs)  
  
Concept of Internet, its applications, specification and technical details for establishing Internet. Types and functions of modems, Internet service providers, Intranets, E-mail, Telnet, FTP, IRC, NNTP, Video conferencing, e-commerce
2. Internet Connectivity (04hrs)  
  
Wired and wireless connectivity like optical fibre, cable media, mobile internet, leased line, ISDN, VSAT, RF link, Wi-Fi
3. World Wide Web (WWW): (06hrs)  
  
World Wide Web and its evolution, web page, web server, HTTP/HTTPS protocol. Examples of web servers. Navigation Tools: Mozilla Firefox, Google Chrome, Internet Explorer, Uniform Resource Locator (URL). Hypertext, hyperlinks and hypermedia, URL, its registration, browsers, search engines, proxy servers

4. Developing Web Portals Using HTML (4hrs)
- Basic structure of HTML •  
Introduction to HTML 5
  - Formatting text, title, headings, Horizontal rules and comments •  
Inserting links and images,
  - Creating tables
  - Creating forms using HTML5 •  
Using div and span tag
- 5 Cascading Style Sheets (CSS) (4hrs)
- Introduction to syntax of CSS,
  - Different methods of including CSS, •  
CSS attributes,
  - CSS box model
  - Various CSS properties like margin, padding, border •  
Font related CSS properties like Text, fonts, color
  - CSS background related properties •  
Class and Id in CSS
- 6 JavaScript (06hrs)
- Basic introduction to JavaScript
  - Methods of including JavaScript •  
Variable declaration
  - Operators in JavaScript
  - Control statements and looping statements •  
Document Object Model (DOM)
  - Validating forms using JavaScript

### LIST OF PRACTICALS

1. Configuring computer system to access internet
2. Managing social networking profile and e-mail account
3. To demonstrate the use of TELNET, FTP, IRC
4. Demonstration of audio-video conferencing
5. Demonstration of e-commerce transaction
6. Creating Web pages using HTML and CSS
7. Creating the email validation using JAVA script
8. Creating of mobile validation, regex checking and empty text box.



## INSTRUCTIONAL STRATEGY

Students should be exposed to Internet as the subject is practice oriented, theoretical Instruction may be given during practical session also.

## RECOMMENDED BOOKS

1. Rajkamal, "Internet and Web Technologies" Tata, McGraw Hill Education Pvt. Ltd., New Delhi.
2. Alam, Tanweer, "Web Technology" Khanna Book Publishing Co. (P) Ltd., New Delhi.
3. Stephanie, Cottrell, Bryant, "Teach Yourself HTML 4.0 with XML, DHTML and Java Script", IDG Books India Pvt. Ltd., New Delhi.
4. Dynamic Web Publishing – Unleashed Tech Media

## SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	06	10
2	04	06
3	06	10
4	04	06
5	04	06
6	06	12
<b>Total</b>	<b>30</b>	<b>50</b>

## OPENELECTIVE

<b>L</b>	<b>P</b>
<b>2</b>	<b>-</b>

### **RATIONALE**

Open Elective refers to a course that students can opt for in addition to their primary area of study. The open electives is from an unrelated discipline with the intention to provide exposure in that discipline. It provides the students the opportunity to select and learn a subject related to his/her interest, thus allowing them to explore their passion..

### **LIST OF SUGGESTED OPENELECTIVES**

The student can opt one course out of the following :

- 1 Foreign Language
- 2 National Cadet Corps (NCC)
- 3 Yoga
- 4 First Aid
- 5 Creative Writing
- 6 Sketching, Drawing and Colour Studies
- 7 Gardening
- 8 Photography
- 9 Legal Studies
- 10 Event Management
- 11 Diet and Nutrition

Open elective can be offered online or offline.

**FOREIGN LANGUAGE**  
**(French, Japanese, German, Spanish)**

**L    P**  
**2    -**

**RATIONALE**

This course is an introduction to the specific language. Learning to understand and articulate oneself in day to day real life situations, and to begin to make sense of the language as a cultural space are the overall objectives of the course. The students should be able to grasp the basic sentence structure and build a good foundational vocabulary through this course.

**LEARNING OUTCOMES**

After undergoing this course, the students will be able to:

- Enhance the level of vocabulary in specific language.
- Manage situational communication in specific language.

**DETAILED CONTENTS**

- |    |  |         |
|----|--|---------|
| 1. | Introduction   | (06hrs) |
|    | Self introduction, Numbers, Days, Months, Date, Time, and Counting                                     |         |
| 2. | Vocabulary   | (06hrs) |
|    | My home, My family, My friend, Daily routine, Hobbies, Food, Greeting and Thanking                     |         |
| 3. | Grammar  | (12hrs) |
|    | Verb and Verb forms, Articles, Possessive pronouns, Auxiliary verbs, Questions, Present and Past tense |         |
| 4. | Theme  | (06hrs) |
|    | Means of transport, Basic directions, Food, Drink, Family, Groceries and Meals                         |         |

### RECOMMENDED BOOKS

1. Annie Berthet, Hugot et al, "Alter Ego - Méthode de Français", Hachette.
2. 3 A Corporation, "Minnano Nihongo ", Goyal Publishers, New Delhi.
3. Stefanie Dengler, "NETZWERK Deutsch als Fremdsprache A1", Goyal Publishers, New Delhi.
4. Jaime Corpas et.al, "Aula International 1", Difusión, Madrid.

### INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

### SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	06	10
2	06	10
3	12	20
4	06	10
<b>Total</b>	<b>30</b>	<b>50</b>

## NATIONAL CADET CORPS (NCC)

**L P**

**2 -**

### RATIONALE

This course is structured to instil in the students qualities like nationalism, patriotism, discipline, team spirit, esprit-de-corps, leadership, self-confidence, national integration and improve their personality. The objective of the course is to expose the students to a regimental way of life, which is essential to inculcate in them the values of discipline, duty, punctuality, orderliness, smartness, and respect for authority, correct work ethos and self-confidence. In addition, it will inculcate defence services work ethos, which is characterized by hard work, sincerity of purpose, honesty, ideals of selfless service, dignity of labour, secular outlook, comradeship, spirit of adventure and sportsmanship.

### LEARNING OUTCOMES

After undergoing this course, the students will be able to: ●

- Explain aims and objectives of NCC.
- Understand the importance of national integration.
- Assist Civil Administration in performance of selective duties during disasters. ●
- Perform drill without arms.
- Contribute towards nation building. ●
- Provide voluntary social service.

### DETAILED CONTENTS

1. Introduction (08hrs)

Aims and objectives of NCC, Organisation structure and training, NCC Song, National Integration and awareness, Religions, Culture, Traditions and Customs of India, National Integration: Importance and Necessity. Freedom Struggle and Nationalist Movement in India, Problems/ Challenges of national integration, Unity in diversity, Famous leaders of India, Images/ Slogans for national integration, Contribution of youth to nation building

2. Civil Affairs (04hrs)
- Civil Defence Organization and its duties/ NDMA, Types of emergencies/ Natural Hazards, Role of NCC during Natural Hazards/ Calamities
3. Drill Without Arms (08hrs)
- General and Words of Command, Attention, Stand at Ease and Stand Easy, turning and inclining at the halt, Sizing, forming up in three ranks and numbering, open and close order march and Dressing, Saluting at the halt, Getting on parade, dismissing and falling out, Marching, length of pace and time of marching in quick time and halt, slow march and halt, Turning on the march and wheeling, Saluting on the March Individual word of command
4. Personality Development and Leadership (04hrs)
- Personality development, self-awareness, Leadership, life/soft skills, time management and character building.
5. Social Service (06hrs)
- Basics of Social service, and its needs, Social/ Rural Development Projects: MNREGA, SGSY, NSAP; Literacy enhancement and poverty alleviation, Social evils, Contribution of youth towards social welfare.

### **RECOMMENDED BOOKS**

- 1 "Cadet Hand Book (Common Subjects)", published by DG, NCC.
- 2 "Grooming Tomorrow's Leaders", published by DG, NCC.
- 3 "Youth in Action", published by DG, NCC.

### **INSTRUCTIONAL STRATEGY**

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

**SUGGESTED DISTRIBUTION OF MARKS**

<b>TopicNo.</b>	<b>TimeAllotted(Hrs)</b>	<b>Marks Allotted (Outof50)</b>
1	08	14
2	04	06
3	08	14
4	04	06
5	06	10
<b>Total</b>	<b>30</b>	<b>50</b>

## YOGA

<b>L</b>	<b>P</b>
<b>2</b>	<b>-</b>

### RATIONALE

Yoga is a practice that connects the body, breath, and mind. It uses physical postures, breathing exercises, and meditation to improve overall health. It not only improves physical health but also mental and spiritual well-being, which are the foundations of life. The course is aimed at developing skills in yoga for strength, flexibility and relaxation.

### LEARNING OUTCOMES

At the end of the course, the students will be able to:

- Explain the importance of yoga and its effect on health ●
- Perform yoga in various forms and combinations
- Understand the philosophy of heartfulness meditation.
- Promote positive health and holistic wellness through yoga and meditation.

### DETAILED CONTENTS

1. Yoga (4hrs)  
  
Concept, need and importance, Yogic principles, Rules and precautions to be followed by yoga practitioners, Introduction to Ashtanga yoga and Yoga sutra
  
2. Asanas and Mudras (14hrs)  
  
Basic asanas, Asanas in different postures - Sukshma Vayayam, Pawanuktasan, Surya Namaskar, Hasta Utthanasana, Padahasthasana, Tadasana, Vrikshasana, Tirayak Tadasana, Natarajasana, Vajrasana, Padmasana, Bhujangasana.  
Mudras - Concept, Important mudras - Prana Mudra, Varuna Mudra, Prithvi Mudra, Aakash Mudra, Gyana Mudra.



3. Pranayama (6hrs)  
KapalbhatiPranayama,NadiShodhanPranayama(AnulomVilom),Bhastrika Pranayama, Ujjayi Pranayama.
4. Meditation (3hrs)  
Heartfulnessmeditation,Practiceonmeditation
5. HealthBenefitsofYogaandMeditation (3hrs)  
BenefitsandeffectofAsanas,MudrasandPranayamaonvarioussystemsand organs of human body.Relaxation and wellness through meditation

### **RECOMMENDED BOOKS**

1. Saraswati, Swami Satyananda, “Asana, Pranayama, Mudra and Bandha”, Yoga PublicationTrust,Bihar.
2. BKS Iyengar, “Light on Yoga”, George Allen and Unwin.
3. MudrasbyHeartfulness;HeartfulnessEducationTrust.
4. Kamlesh D Patel, “The Way of the Heart”, Spiritual Hierarchy Publication Trust
5. Goel, Aruna, “Yoga Education: Philosophy and Practice”, Deep & Deep Publications, NewDelhi.
6. Nagendra,HR,andRNagarathna,“Yoga for Promotion of Positive Health”. SwamiVivekananda Yoga Prakashan.

### **INSTRUCTIONAL STRATEGY**

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

**SUGGESTED DISTRIBUTION OF MARKS**

<b>TopicNo.</b>	<b>TimeAllotted (Hrs)</b>	<b>MarksAllotted (Out of 50)</b>
1	04	06
2	14	24
3	06	10
4	03	05
5	03	05
<b>Total</b>	<b>30</b>	<b>50</b>

## **FIRSTAID**

<b>L</b>	<b>P</b>
<b>2</b>	<b>-</b>

### **RATIONALE**

First aid is a valuable and life-saving course. The objective of this course is to impart knowledge and skills to the students necessary in an emergency to help sustain life, reduce pain, and minimize the consequences of injury or sudden illness until professional medical help arrives.

### **LEARNING OUTCOMES**

At the end of the course, the students will be able to:

- Administer basic life support skills including cardiopulmonary resuscitation •  
Provide first aid of simple and multiple system trauma.

### **DETAILED CONTENTS**

- |    |                    |        |
|----|--------------------|--------|
| 1. | Basic of First Aid | (4hrs) |
|----|--------------------|--------|

First aid, importance of first aid, first aider, laws of first aid, contents of an ideal first aid kit, dealing with an emergency.

- |    |                    |         |
|----|--------------------|---------|
| 2. | Emergency Response | (10hrs) |
|----|--------------------|---------|

CPR, steps for performing CPR, CPR for newborns and infants, recovery position, first aid in drowning, fractures of bones, causes and types of fractures, dislocation.

- |    |                    |        |
|----|--------------------|--------|
| 3. | First Aid in Burns | (4hrs) |
|----|--------------------|--------|

Types of burns, danger of burns, first aid in dry burns and scalds, electrical burns, chemical burns, sunburn, heatstroke.

4. First Aid in Wounds and Injuries (6hrs)

Types of wounds - small cuts and abrasions, Head injury - nose bleed, bleeding gums, bleeding from varicose veins, Shocks - causes of shock and its first aid.

5. First Aid in Poisoning (3hrs)

Poisoning by swallowing, gases, injections, skin absorption, Animal bites, snake bites and insect stings.

6. First Aid in Foreign Objects Entering the Sense Organs: (3hrs)

Foreign body in the eye, ear, nose, skin, swallowing of foreign objects.

Note: Persons from Civil Defence/ National Disaster Response Force (NDRF) etc. can be invited for conduct of first aid classes and demonstration of first aid practices.

### **RECOMMENDED BOOKS**

1. Gauri Goyal, Dr. Kumkum Rajput, Dr. Manjul Mungali., "First Aid and Health", SBPD Publishing House
2. Williamson, Swapna Naskar and Goswami Mala, "First Aid and Emergency Care", Kumar Publishing House, New Delhi.
3. Mahopatra, R., "First Aid for You and Me", Academic Publishers, New Delhi.

### **INSTRUCTIONAL STRATEGY**

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

**SUGGESTED DISTRIBUTION OF MARKS**

<b>Topic No.</b>	<b>Time Allotted (Hrs)</b>	<b>Marks Allotted (Out of 50)</b>
1	04	06
2	10	18
3	04	06
4	06	10
5	03	05
6	03	05
<b>Total</b>	<b>30</b>	<b>50</b>

## CREATIVELITERATURE

**L P**  
**2 -**

### RATIONALE

Creative writing is a written art form that uses the imagination to tell stories and compose essays, poetry, screenplays, novels, lyrics, and more. The objective of this course is to acquaint the students with ideas related to creative writing including art, craft and basic skills required for a creative writer.

### LEARNING OUTCOMES

After undergoing this course, the students will be able to: ●

- Distinguish between literary genres.
- Practice various forms of creative writing.
- Write for various media.

### DETAILED CONTENTS

1. Fundamentals of Creative Writing (06hrs)  
  
Meaning and significance of creative writing, Genres of creative writing: poetry, fiction, Non-fiction, Drama and other forms, Research for creative writing
2. Elements of Creative Writing (10hrs)  
  
Plot, Setting, Character, Dialogue, Point of view, Literary devices and figurative language, Elements of style, Grammar and the structure of language, Proofreading and editing
3. Traditional Forms of Creative Writing (10hrs)  
  
Fiction: short story, novella and novel, Poetry, Drama, Essay, Fable, Biography, Memoire and autobiography, Travelogues, Diaries, Self-narrative writing

4. WritingforMedia (04hrs)

Printmedia,Broadcastmedia,Internet-Webcontentwritingandblogwriting, Advertising

### RECOMMENDED BOOKS

1. Anjana Neira Dev. Anuradha Marwah, Swati Pal, “Creative Writing: A Beginner’s Manual”, Pearson Longman, Delhi
2. Robert Scholes, Nancy R. Comley, Carl H. Klaus, Michael Silverman, “Elements of Literature: Essay, Fiction, Poetry, Drama, Film”, Delhi
3. Bell, Julia and Magrs, Paul, “The Creative Writing Course Book”, Macmillan, London
4. Gardner, John, “The Art of Fiction”, Vintage, New York

### INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

### SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	6	10
2	10	16
3	10	16
4	4	08
<b>Total</b>	<b>30</b>	<b>50</b>

## **SKETCHING, DRAWING AND COLOUR STUDIES**

<b>L</b>	<b>P</b>
<b>2</b>	<b>-</b>

### **RATIONALE**

This course is aimed to develop aesthetic sense of students. It also encompasses training in sketching, drawing and colouring to develop their mental faculties of observation, imagination and creation.

### **LEARNING OUTCOMES**

At the end of the course, the students will be able to:

- Sketch common objects and various geometrical and non-geometrical forms found in life and nature.
- Use different medium and materials.
- Use colour judiciously in creation of visual work.
- Prepare collage using various paper and materials.

### **DETAILED CONTENTS**

1. Sketching of Objects and Nature (8hrs)  
  
Sketching of objects at home like cup, plate, glass, book, pencil box etc. Sketching of tree, mountain, hills, vegetables flower etc. for Nature study using Pencil, colour Pencil
2. Drawing of Human and Animal Figures (10 hrs)  
  
Drawing of Human and animal form with the help of Basic Geometrical shapes
3. Collage Making (4hrs)  
  
Creating Collage with the help of coloured cutout papers, picture from a magazine or any easily available materials



4. Colours (8hrs)

Watercolour, Poster colour, Colour theory – Colour system, Colour wheel, Colour dimensions, Drawing with oil pastel colour and dry pastel.

**RECOMMENDED BOOKS**

1. Betty Edwards, "Color: A Course in Mastering the Art of Mixing Colors", Penguin Group Inc., New York
2. Feisner, E., "Colour Studies", Fairchild Publications, USA

**INSTRUCTIONAL STRATEGY**

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

**SUGGESTED DISTRIBUTION OF MARKS**

<b>Topic No.</b>	<b>Time Allotted (Hrs)</b>	<b>Marks Allotted (Out of 50)</b>
1	08	14
2	10	16
3	04	06
4	08	14
<b>Total</b>	<b>30</b>	<b>50</b>

## GARDENING

<b>L</b>	<b>P</b>
<b>2</b>	<b>-</b>

### RATIONALE

Gardening activities are fantastic for helping students engage in a way that is more difficult in the classroom. Watching plants grow is a fun and educational experience for them. Their enormous curiosity and excitement over anything new makes them natural for gardening. Growing plant seeds teaches them how nature works and adds to their interest in environmental sustainability.

### LEARNING OUTCOMES

At the end of the course, the students will be able to :

- Explain various techniques of gardening, cultivation, multiplication, raising of seedlings of garden
- Discuss new and modern techniques of plant propagation.
- Develop interest in nature and plant life.

### DETAILED CONTENTS

- |    |  |         |
|----|--|---------|
| 1. | Gardening  | (6hrs)  |
|    | Definition, objectives and scope. Different types of gardening - landscape and home/terrace gardening, parks and its components. Plant materials and design. |         |
| 2. | Gardening Operations   | (14hrs) |
|    | Soil laying, manuring, watering, management of pests and diseases and harvesting.  |         |

3. Sowing/Raising of Seeds and Seedlings (10hrs)

Structure and types - Seed dormancy; causes and methods of breaking dormancy. Seed storage: Seed banks, factors affecting seed viability, genetic erosion Seed production technology. Seed testing and certification. Transplanting of seedlings.

### RECOMMENDED BOOKS

1. Bose T.K., Mukherjee, D., "Gardening in India", Oxford & IBH Publishing Co. New Delhi.
2. Kumar, N., "Introduction to Horticulture", Rajalakshmi Publications. Nagercoil, TamilNadu.
3. Sandhu, M.K., "Plant Propagation", New Age International Publishers.

### INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

### SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	06	10
2	14	24
3	10	16
<b>Total</b>	<b>30</b>	<b>50</b>

## PHOTOGRAPHY

**L    P**  
**2    -**

### RATIONALE

Photography is a unique and creative medium of self-expression that requires aesthetic sense as well as technical expertise. Students who are highly passionate about learning the workings of cameras and different technologies based on them can pursue this course. The objective of this course is to enable the candidates to understand the utility of different camera parts and the art of taking candid shots.

### LEARNING OUTCOMES

At the end of the course, the students will be able to: ●

- Explain the principles of photography.
- Handle various cameras for taking photographs. ●
- Apply aesthetics of photography.

### DETAILED CONTENTS

1.      Basic Photography (04hrs)  
  
Meaning and definition of photography, Basic principle in the film and digital photography, History of photography.
2.      Camera Function and Accessories (04 hrs)  
  
Basic camera, Different parts of camera and their basic functions, Camera Accessories
3.      Main Control of Camera (10hrs)  
  
Part of Camera, Types of lenses, Shutter, Diaphragm, Exposure, Film and digital image sensor, Depth of field, Lighting, Photography with flash, Filters in photography.

4. DigitalCamera (05hrs)

Processofdigitalimaging,Typesofdigitalcameras,Menuoperationsofdigital cameras, Introduction to colors.

5. AestheticsofPhotography (07hrs)

Definition of lighting, Principles of lighting, Reflection, Light characteristics, Color,Direct light and indirect light, Light and subject, Light as subject, Shadow as subject,Light sources, Naturallight and artificial light, Principles of visualization,Composition guidelines

### RECOMMENDED BOOKS

1. Dilwali, Ashok, “All about Photography”, National Book Trust, New Delhi.
2. Sharma, O.P., “Practical Photography”, Hind Pocket Books.
3. Freeman, “The Photographer's Guide to Light”, John Collins & Brown

### INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

### SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	04	06
2	04	08
3	10	16
4	05	08
5	07	12
<b>Total</b>	<b>30</b>	<b>50</b>

## LEGAL STUDIES

<b>L</b>	<b>P</b>
<b>2</b>	<b>-</b>

### RATIONALE

The course introduces the students to Indian legal system, contracts management, and legal documentation. Further, the course familiarizes students with basic knowledge of labour laws that would be useful.

### LEARNING OUTCOMES

At the end of the course, the students will be able to: •

- Understand the Indian Legal System.
- Discuss Indian Contract Act.
- Explore labour laws and laws related to women.

### DETAIL CONTENTS

1. Introduction to Indian Legal System (4hrs)
 

Constitution of India, Sources of Law and Judicial system.
2. The Indian Contract Act (6hrs)
 

Contract – meaning and kinds. Essentials of a valid contract, Discharge of a contract, Contract of Agency
3. Legal Documentation (10hrs)
 

Drafting of legal documents including Non-Disclosure Agreements (NDA), Request for Proposal (RFP), collaboration agreements, joint venture agreements, tendering and subcontracting

4. Labour Laws (6hrs)  
Provident Fund, ESIC, Gratuity and Bonus
5. Legislation Related to Women (4hrs)  
Sexual harassment at Work place (Prevention, Prohibition and Redressal),  
Protection of Women from Domestic Violence Act, Criminal Law (Amendment)  
Act, The Indecent Representation of Women (Prohibition) Act.

### RECOMMENDED BOOKS

1. Joseph Minattur, "Indian Legal System", Indian Law Institute, New Delhi.
2. Srivastava, S.C., "Industrial Relations and Labour Laws", Vikas Publishing House Pvt.Ltd.
3. Aggarwal, S K, "Business Law", Galgotia Publishers, Delhi.

### INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

### SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	04	07
2	06	10
3	10	16
4	06	10
5	04	07
<b>Total</b>	<b>30</b>	<b>50</b>

## EVENT MANAGEMENT

**L P**  
**2 -**

### RATIONALE

Event Management is a course which deals with the planning, coordinating, and organising of events for people and communities. It is a part of the mass communication course which is offered by many prestigious colleges in India. Event management course aims to imbibe knowledge on analysing, marketing, planning and strategies in business administration to its students.

### LEARNING OUTCOMES

After undergoing this course, the students will be able to:

- Explain the purpose of special events in an organization.
- Use techniques and strategies required to plan successful special events. • Promote and conduct special events.
- Assess the quality and success of special events.

### DETAILED CONTENTS

1. Principles of Event Management (04hrs)

Introduction to event management, size & type of event, event team, code of ethics, principles of event management, role of event manager –planning, organising, leading and controlling an event

2. Event Planning (08hrs)

Objective of event, use of planning tools, protocols, dress codes, staging, staffing.

3. Event Marketing (04hrs)

Advertising, publicity, event marketing process, even hospitality



4. EventLeadership (06hrs)  
Teambuilding&workdistribution,managingteam,managingmeetings, written& verbal communication.
5. EventSafetyand Security (04hrs)  
RoleofSecurity,Safety, Crowdmanagement,Risk management.
6. Event Accounting (04hrs)  
Budget,Cashflowanalysis,Profit &lossstatement,Balancesheet.

### RECOMMENDED BOOKS

1. Singla, Sita Ram, "Event Management", ATH Publishers, New Delhi.
2. Sharma, Divakar, "Event Planning and Management", Deep & Deep Publication.

### INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

### SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	4	06
2	8	12
3	4	08
4	6	10
5	4	08
6	4	06
<b>Total</b>	<b>30</b>	<b>50</b>

## **DIET AND NUTRITION**

<b>L</b>	<b>P</b>
<b>2</b>	<b>-</b>

### **RATIONALE**

The objective of this course is to help the students to understand the concept of diet and nutrients and provide knowledge about causes and symptoms of Nutrition-related disorders.

### **LEARNING OUTCOMES**

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

- Comprehend the nutritional value of different food items.
- Explain the need of nutrition during the normal stages of life. ●
- Calculate normal dietary requirements and balanced diet.

### **DETAILED CONTENTS**

- |    |              |         |
|----|--------------|---------|
| 1. | Introduction | (04hrs) |
|----|--------------|---------|

Basic concepts of health, Nutrition, Nutrients, Nutrition requirement, Balanced diet. Relationship between health & nutrition, Assessment of nutritional status.

- |    |           |         |
|----|-----------|---------|
| 2. | Nutrients | (16hrs) |
|----|-----------|---------|

Nutrients & their classification. Macro Nutrients – Sources, Functions and Effects on the Body; Micronutrients – sources, Functions and effects on the Body; Fat soluble nutrients – sources, Functions and effects on the body, Water soluble nutrients – Sources, Functions and effects on the body, Digestion, Absorption of carbohydrates, Lipids, Proteins and energy.

3. Energy and Nutrition-related Disorders (06hrs)

Basic concepts, Definition and components of energy requirement, Protein malnutrition, Iodine deficiency disorders, Disease and disorder caused by imbalance of nutrients, Food allergies.

4. Nutritional Needs (04hrs)

Nutritional need during normal stages of life - Infancy, Childhood, Adolescence, Pregnancy, Lactation and Old age, Disease management with diet.

### RECOMMENDED BOOKS

1. Antia, F.P., "Clinical Dietetics and Nutrition", Oxford University Press.
2. Swaminathan, "Essentials of Food and Nutrition", Ganesh and Co., Madras.
3. Subhangini Joshi, "Nutrition and Dietetics", McGraw Hill Publishers.
4. B.S.Narsinga Rao et al, "Nutritive Value of Indian Foods", National Institute of Nutrition, Hyderabad.

### INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

### SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	04	06
2	16	28
3	06	10
4	04	06
<b>Total</b>	<b>30</b>	<b>50</b>

## ENERGY CONSERVATION AWARENESS CAMP

A diploma holder must have knowledge of various tips of energy conservation. Energy conservation has attained priority as it is regarded as additional energy resource. Energy saved is energy produced. This camp covers the basic concepts of energy management and its conservation. It gives the insight to energy conservation opportunities in household appliances and star rating. Lectures will be delivered on following broad topics. There will be no exam for this camp.

1. Classification of energy- primary and secondary energy, commercial and non-commercial energy, non-renewable and renewable energy with special reference to solar energy
2. Introduction to energy management, energy conservation, energy efficiency and its need
3. Salient features of Energy Conservation Act 2001 & The Energy Conservation (Amendment) Act, 2010 and its importance
4. Standards and Labeling
  - Concept of star rating and its importance
  - Types of product available for star rating
5. Salient Features of Punjab Energy Conservation Building Code (ECBC)
6. General Energy Saving Tips in:
  - Lighting System
  - Room Air Conditioners
  - Refrigerators
  - Water Heater
  - Computers
  - Fans, Heaters, Blowers and Washing Machines
  - Television
  - Water Pumps
  - Kitchens
  - Transport

## **DRUGS USE AND ABUSE AWARENESS CAMP**

This is to be organized as a stretch for two to three days during the third semester. Lectures will be delivered on the following broad topics. There will be no examination for this subject.

1.            **Drugs Use and Abuse in Society**
  - b. Concept and overview
  - c. Extent of the problem
  - d. Drug use as a social problem
  - e. Causes of Drug Use: Biological, Socio-cultural, psychological
  
2.            **Types of Drugs and Identification of Abuse**
  - a. Familiar drugs: Tobacco, Caffeine, over-the-counter drugs
  - b. Restricted Drugs: Opiates, Hallucinogens, Marijuana
  - c. Performance enhancing drugs
  - d. Uppers and Downers: Stimulants and Depressants
  
3.            **Impact of Drug Abuse**
  - a. Individual level biological and psychological
  - b. Family social, National
  
4.            **Management and Prevention of Drug Abuse**
  - a. Medical and psychological
  - b. Role of family, School, Media and Legislation

