School of Engineering & Technology

AY 2023

CSE - Semester I

Theory/ Practical	Sl. No	Course Type	Course Name	Hours per week			Credit
				L	T	P	C
T	1.	BSC	Chemistry	3	0	0	3
P	2.	BSC	Chemistry Lab	0	0	2	1
T	3.	BSC	Mathematics - I	3	1	0	4
T	4	ESC	Programming for Problem Solving	2	0	0	2
P	5	ESC	Programming for Problem Solving Lab	0	0	4	2
T	6	HSMC	English for Technical Communication	2	0	2	3
T	7	MC	Universal Human Value	2	1	0	3
P	8	ESC	Manufacturing Practice Workshop-I	0	0	2	1
T	9	AU	Japanese language/Sports/Yoga	2	0	0	0
Total				14	2	10	19

Section A: CSE

BSC	**CHEMISTRY**	L	T	P	C
		3	0	0	3

Prerequisite: Knowledge of Chemistry at (10+2) level

Course Objectives:

1. To provide knowledge of molecular orbital theory along with electronic configuration on the basis of Schrodinger wave equation for simple homonuclear and heteronuclear diatomic molecules.
2. To analyze different compounds with the help of different spectroscopic techniques.
3. To make students aware of the relationships between different thermodynamics properties with reference to chemical systems.
4. To provide brief idea about sustainable chemistry.
5. To provide an insight into different types of fuel and applications of various engineering materials.

Course Outcome:

After successful completion of the course, the students will be able

CO1: To analyse microscopic chemistry in terms of atomic and molecular orbitals.

CO 2: To apply the fundamental principles and applications of different spectroscopic techniques.

CO 3: To explain bulk properties and processes using thermodynamic considerations.

CO 4: To explain sustainable chemistry along with its applications.

CO 5: To explain the chemistry of different types of fuel and engineering materials.

Module 1:ATOMIC AND MOLECULAR STRUCTURE	6 hours

Wave property of matter, Schrodinger's wave equation, wave function, radial and angular wave functions, Eigen function, Eigen value, Particle in an one dimensional box and quantization of energy, Three dimensional potential box and degeneracy of energy states, Molecular Orbital Theory – Applications of MO Theory in diatomic molecules (N_2, O_2, NO and CO)

Module 2:SPECTROSCOPIC TECHNIQUES AND APPLICATIONS	7 hours

Principle of spectroscopy, principle and applications of UV – Visible spectroscopy, infra-red spectroscopy, applications of nuclear magnetic resonance spectroscopy, atomic absorption spectroscopy and flame photometry. Fluorescence and its applications in medicine.

Module 3:USE OF FREE ENERGY IN CHEMICAL EQUILIBRIA	6 hours

Entropy and randomness, Entropy change in reversible and irreversible processes, free energy, free energy as a criteria for spontaneity of a process, relationship between free energy change and entropy change,Dependence of Gibbs free energy on temperature and pressure, free energy and EMF, Cell potentials, the Nernst equation and applications.

Module 4: GREEN AND SUSTAINABLE CHEMISTRY	5 hours

Principles of green chemistry, Idea of green synthesis, Carbon footprint and sequestration, Carbon trading. Brief idea of alternative solvents–Water, ionic liquids, supercritical fluid system (Carbon dioxide), Waste management**:** Solid, electronic & industrial wastes, Waste management procedures and relevant standards.

Module 5: CORROSION AND ITS PREVENTION	5 hours

Definition, causes, effects, Dry or chemical corrosion andwet or electrochemical corrosion - their mechanisms. Types of electrochemical corrosion (Differential aeration, Galvanic, Concentration cell), Typical electrochemical corrosion like Pitting, Waterline. Factors affecting corrosion, passivity, Protection against corrosion.

MODULE 6 : FUEL AND COMBUSTION	7 hours

Classification of fuel, calorific value, characteristics of a good fuel, determination of calorific value of fuel using the Bomb Calorimeter, calorific value from Dulong's formulae, classification of coal, proximate and ultimate analysis of coal, fractional distillation of

petroleum, cracking, thermal and catalytic cracking, Refining of gasoline, Reforming, knocking, octane rating of fuel, Chemical structure of knocking, Antiknocking agents, Diesel fuel, cetane number, additives for diesel fuel,

MODULE 7: ADVANCED ENGINEERING MATERIALS	9 hours
Cement - Cement and its classification, Portland cement, raw materials, manufacture, and its setting and hardening. Refractory materials - Definition, classification into acidic, basic and neutral refractories and their uses. Lubricants – Definition and function of lubricants, classification, additives for lubricants.	
Total hours	**45 hours**

Text Book(s)

1.	Engineering Chemistry - Jain &Jain,DhanpatRai& Company.
2.	A Text Book of Engineering Chemistry – Dr. Sunita Rattan, K. Kataria& Sons.
3.	A Text Book of Engineering Chemistry - Dr. RajashreeKhare, S. K. Kataria& Sons.

Reference Books

1.	Physical Chemistry, P. W. Atkins, Oxford.
2.	Concise Inorganic Chemistry, J. D. Lee,Blackwell Science
3.	Fundamentals of Molecular Spectroscopy, C. N. Banwell, E. M. McCash,Tata McGraw – Hill.
4.	Principles of Physical Chemistry,Puri, Sharma, Pathania,ShobanLalNagin Chand & Co.
5.	Spectroscopy of Organic Compunds, P. S. Kalsi, Wiley Eastern.

MODULE 6 : FUEL AND COMBUSTION	8 hours
Classification of fuel, calorific value, characteristics of a good fuel, determination of calorific value of fuel using the Bomb Calorimeter, calorific value from Dulong's formulae, classification of coal, proximate and ultimate analysis of coal, fractional distillation of petroleum, cracking, thermal and catalytic cracking, Refining of gasoline, Reforming, knocking, octane rating of fuel, Chemical structure of knocking, Antiknocking agents, Diesel fuel, cetane number, additives for diesel fuel,	
MODULE 7 : ADVANCED ENGINEERING MATERIALS	**6 hours**
Cement - Cement and its classification, Portland cement, raw materials, manufacture, and its setting and hardening. Refractory materials - Definition, classification into acidic, basic and neutral refractories and their uses. Lubricants – Definition and function of lubricants, classification, additives for lubricants.	

Total Lecture hours	46 hours

Text Book(s)

1.	Engineering Chemistry - Jain &Jain , Dhanpat Rai & Company.
2.	A Text Book of Engineering Chemistry – Dr. Sunita Rattan, . K. Kataria & Sons.
3.	A Text Book of Engineering Chemistry - Dr. Rajashree Khare, S. K. Kataria & Sons.

Reference Books

1.	Physical Chemistry, P. W. Atkins, Oxford.
2.	Concise Inorganic Chemistry, J. D. Lee ,Blackwell Science
3.	Fundamentals of Molecular Spectroscopy, C. N. Banwell, E. M. McCash, Tata McGraw – Hill.
4.	Principles of Physical Chemistry, Puri, Sharma, Pathania, Shoban Lal Nagin Chand & Co.
5.	Spectroscopy of Organic Compunds, P. S. Kalsi, Wiley Eastern.

BSC	CHEMISTRY LABORATORY	L	T	P	C
		0	0	2	1

Pre-requisite: Knowledge of Chemistry at (10+2) level

Course Objectives:

1. To make students familiar with different quantitative analysis.
2. To enable students carry out experiments using theoretical knowledge.
3. To provide knowledge of different properties of liquids by experimental methods.

Course Outcome:

After successful completion of the course, the students will be able

CO1: To conduct quantitative analysis of a given substance by using different types of Volumetrictitrations.

CO2: To apply theoretical knowledge to carry out different experiments skillfully.

CO3: To learn the physical properties like surface tension and viscosity of liquids by conducting the experiments.

List of Experiments

1. Estimation of hardness of water by a standard solution of EDTA
2. Estimation of Fe^{2+} by a standard solution of $KMnO_4$
3. Estimation of Cu^{2+} by a standard solution of $Na_2S_2O_3$
4. Conductometric titration between strong acid and strong alkali
5. pH-metric titration between strong acid and strong alkali
6. Determination of surface tension of a liquid at room temperature w.r.t water by drop number method using stalagmometer.
7. Determination of coefficient of viscosity of a given solution at room temperature by Ostwald's Viscometer.
8. Preparation of potash alum, $[K_2SO_4.Al_2(SO_4)_3.2H_2O]$

List of Equipments

- Ostwald's viscometer
- Stalagmometer
- Conductivity meter
- pH meter   Total hours: 15 hours

Text Book(s)

1	Laboratory Manual on Engineering Chemistry by S. K. Bhasin and Sudha Rani.
2	Practical Engineering chemistry by Sunitha and Rathna.

Reference Books

1.	A Textbook of Practical Chemistry by Dr.Sudarsan Barua

School of Engineering & Technology
B. Tech.-CE, ME, ECE, EE, CSE
SEMESTER I & II
AY 2023-24

SEMESTER - I

T/P	Course Type	Course Code	Course Name	Hours per Week			Credit	Max. Mark	
				L	T	P	C	CA	FA
T	**BSC**	**BSC102**	**Mathematics-I**	**3**	**1**	**0**	**4**	**40**	**60**

			L	T	P	C
BSC102		**MATHEMATICS-I** **(Calculus and Linear Algebra)**	**3**	**1**	**0**	**4**

Pre-requisite: Knowledge of Mathematics at Class XI & XII

Course Objectives:

1. To equip the students with standard concepts and tools at an intermediate to advanced level
2. To familiarize the prospective engineers with techniques in calculus, multivariate differentiation and integration and their applications
3. To make students capable of using matrix methods and linear algebra as tools to solve engineering problems

Course Outcome:

After successful completion of the course, the students will learn

CO 1: to apply differential and integral calculus to notions of curvature and to improper integrals. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.

CO 2: to apply the Mean Value Theorems that in Engineering problems.

CO 3: the tool of power series and infinite series for learning advanced Engineering Mathematics.

CO 4: to acquaint with mathematical tools needed in evaluating multiple integrals and their usage.

CO 5: to use the essential tool of matrices and linear algebra in a comprehensive manner.

Module 1: Basic Calculus	8 hours

Curvature, evolutes and involutes; Evaluation of definite and improper integrals; Beta and Gamma functions and their properties; Applications of definite integrals to evaluate surface areas and volumes of revolutions.

Module 2: Single-variable Calculus (Differentiation)	8 hours

Rolle's Theorem, Mean value theorems and applications; Extreme values of functions; Linear approximation; Indeterminate forms and L' Hospital's rule; Taylor and Maclaurin theorem

Module 3: Sequences and series	8 hours

Limits of sequence of numbers, Calculation of limits, Infinite series; Tests for convergence; Power series, Convergence of Taylor series, Error estimates.

Module 4: Multivariable Calculus	12 hours

Partial derivatives, Total derivative; Directional derivatives, Gradient, Divergence and Curl; Tangent plane and normal line; Center of mass and Gravity (constant and variable densities); Orthogonal curvilinear coordinates; Scalar line integrals, Vector line integrals, Scalar surface integrals, Vector surface integrals, Volume integrals, Theorems of Green, Stokes and Gauss.

Module 5: Linear Algebra	12 hours

Linear Systems of Equations; Linear Independence; Rank of a Matrix; Determinant, Inverse of

a matrix, Rank-nullity theorem; System of linear equations; Symmetric, Skew-symmetric and Orthogonal matrices; Determinants; Eigenvalues and eigenvectors; Orthogonal transformation; Diagonalization of matrices; Cayley-Hamilton Theorem.

Total Lecture hours	48 hours

Text Book

1. **AICTE's Prescribed Textbook: Mathematics-I (Calculus & Linear Algebra), Khanna Book Publishing Co.**

Reference Books

1. Reena Garg, Engineering Mathematics, Khanna Book Publishing Company, 2022.
2. . Reena Garg, Advanced Engineering Mathematics, Khanna Book Publishing Company, 2021.
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
4. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
5. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.
6. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.
7. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
8. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010

PROGRAMMING FOR PROBLEM SOLVING	L	T	P	C
	2	1	2	4

Pre-requisite: Basic computer knowledge, basic mathematics

Course Objectives:

1. To learn the fundamentals of computers.
2. To understand the various steps in program development.
3. To learn the syntax and semantics of C programming language.
4. To learn the usage of structured programming approach in solving problems.
5. To understated and formulate algorithm for programming script
6. To analyze the output based on the given input variable

Course Outcome:

After successful completion of the course, the students will learn

CO1: Illustrate basic concepts of computer and C programming.
CO2: Apply the concepts of conditional and looping statements.
CO3: Demonstrate the ability to write C program using arrays, structures, pointers and files.
CO4: Develop modular programs using C language.

MODULE 1: Introduction to Programming	**8 hours**

Introduction to Programming; Introduction to components of a computer system (disks, memory, processor, where a program is stored and executed, operating system, compilers etc.) Idea of Algorithm: steps to solve logical and numerical problems. Representation of Algorithm: Flowchart/Pseudocode with examples. From algorithms to programs; source code, variables (with data types) variables and memory locations, Syntax and Logical Errors in compilation, object and executable code.

MODULE 2: Introduction to C	**5 hours**

Using Comments, Keywords, Identifiers, Tokens, Basic Data Types, Writing C Expressions using Operators, Precedence of Operators, I/O Statements in C

MODULE 3: Conditional Branching and Loops	**8 hours**

Conditional Branching Statements, Iterative Statements, Nested Loops, Break and Continue Statements, Goto Statements.

MODULE 4: Arrays and Strings	**6 hours**

1-D Array-Declaration, Accessing Array Elements, Array Operations, 2-D Array-Matrix Addition, Subtraction, Multiplication, Character Arrays, Strings, String Manipulation Function.

MODULE 5: Functions	6 hours
Function Declaration/Prototype, Function Definition, Function Call, Return Statement, Passing Parameters, Scope of Variables, Storage Classes, Recursive Function. Example programs, such as Finding Factorial, Fibonacci series, Ackerman function etc. Quick sort or Merge sort.	
MODULE 6: Structure	**6 hours**
Structures, Defining Structures, Accessing Members, Array of Structures.	
MODULE 7: Pointers and File handling	**6 hours**
Pointers, Idea of pointers, Defining pointers, Use of Pointers in self-referential structures, File handling.	
Total Lecture hours	**45 hours**

Text Book

(1) Byron Gottfried, Schaum's Outline of Programming with C,McGraw-Hill

(2) Yashavant Kanetkar, Let us C, BPBPublication

(3) E. Balaguruswamy, Programming in ANSI C, TataMcGraw-Hill

(4) Yashavant Kanetkar, Understanding Pointers in C, BPBPublication.

Reference Books

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

PROGRAMMING FOR PROBLEM SOLVING LABORATORY

List of Lab Experiments		
Lab 1	Familiarization with programming environment (editors, compilation, debugging etc.)	**2 hours**
Lab 2	Simple computational problems using expressions and precedence	**2 hours**
Lab 3	Problems involving using if-then-else and switch statements	**2 hours**
Lab 4	Iterative problems e.g., sum of series, factorial, Fibonacci series etc.	**4 hours**
Lab 5	1D, 2D Array manipulation: summation, finding odd/even in a set, string handling etc.	**4 hours**
Lab 6	Matrix problems (addition, multiplication etc.), String operations (finding length, concatenation, comparing etc.)	**4 hours**
Lab 7	Simple function illustrating the concepts, call by value	**2 hours**
Lab 8	Recursive functions for summation, Fibonacci series, and factorial	**4 hours**
Lab 9	Pointers, call by reference, passing arrays to functions, passing address of structure to function, passing array of structure to function, pointers and arrays, function pointer, dynamic allocation of block of memory and accessing the elements.	**4 hours**
Lab 10	File operations on text files, binary files.	**2 hours**
	Total	**30 hours**

Text Book(s)

1   Byron Gottfried, Schaum's Outline of Programming with C,McGraw-Hill

2   YashavantKanetkar, Let us C, BPBPublication

3   E. Balaguruswamy, Programming in ANSI C, TataMcGraw-Hill

4   YashavantKanetkar, Understanding Pointers in C, BPBPublication

Reference Books

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

HSMC102	ENGLISH FOR TECHNICAL COMMUNICATION	L	T	P	C
		2	0	2	3

Pre-requisite: English language competence of 10+2 level

Course Objectives: the objectives of this course are to:

1. provide learning environment to practice listening, speaking, reading and writing skills
2. assist the students to carry on the tasks and activities through guided instructions and materials
3. effectively integrate English language learning with employability skills and training
4. provide hands-on experience through case-studies, mini-projects, group and individual presentations

Course Outcome: After successful completion of this course, the students will be able to

1. develop their basic as well as domain specific vocabulary
2. apply the basic principles of effective writing in constructing meaningful sentences and paragraphs, and writing different styles of texts
3. produce various academic and professional texts like essays, reports, and letters
4. enhance their English language skills and employability skills through activities and training in a language laboratory

Module 1: Vocabulary Building	6 hours

The concept of Word Formation, root words, prefixes and suffixes, synonyms, antonyms, and standard abbreviations,
collocations, domain specific vocabulary used in real life contexts, vocabulary building exercises

Module 2: Basic Writing Skills	6 hours

Mechanisms of writing: importance of proper punctuation, English punctuation marks, capitalization, semantic markers
Sentence Structures: simple, complex, compound
Use of phrases and clauses in sentences
Paragraphs: parts of a paragraph, topic sentence, supporting sentences, concluding sentence
Organizing principles of paragraphs, Creating coherence and unity, techniques for writing precisely

Module 3: Nature and Style of sensible Writing	4 hours

Describing, defining classifying, providing examples or evidence, writing introduction and conclusion of a long text

Module 4: Identifying Common Errors in writing	5 hours

Subject-verb agreement, noun-pronoun agreement, misplaced modifiers, articles, prepositions, redundancies, clichés

Module 5: Writing Practices	7 hours

Comprehension, formal letter writing, essay writing,
report writing: features, types, format, structure, report writing process, sources of data

collection, plagiarism	
Module 6: **Oral Communication** (This Module involves interactive practice sessions in Language Lab)	**8 hours**
Listening Comprehension Pronunciation, Intonation, Stress and Rhythm Common Everyday Situations: Conversations and Dialogues Communication at Workplace Interviews Formal Presentations	
Total Lecture hours	**36 hours**
Text Book(s)	
1.	**AICTE's Prescribed Textbook: English (with Lab Manual) ISBN: 978-93-91505-097**
Reference Books	
1. 2. 3. 4. 5. 6. 7.	Effective Communication Skills. Kul Bhushan Kumar, Khanna Book Publishing, 2022. Practical English Usage. Michael Swan. OUP. 1995. Remedial English Grammar. F.T. Wood. Macmillan.2007 On Writing Well. William Zinsser. Harper Resource Book. 2001 Study Writing. Liz Hamp- Lyons and Ben Heasly. Cambridge University Press. 2006. Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press. 2011. Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press.

| HSMC | **Universal Human Values-II:** | **L** | **T** | **P** | **C** |
| | Understanding Harmony And Ethical Human Conduct | **2** | **1** | **0** | **3** |

Prerequisite: UHV 1 / SIP

Course Objectives:

This introductory course input is intended:

1. To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.

2. To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.

3. To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature.

Course Outcome:

By the end of the course, students are expected to become more aware of themselves, and their surroundings (family, society, nature); they would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind. They would have better critical ability. They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society). It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

| **Module:1 Introduction** | **9 hours** |

Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) , Understanding Value Education ,Sharing about Oneself ,Self-exploration as the Process for Value Education , Continuous Happiness and Prosperity – the Basic Human Aspirations , Exploring Human Consciousness ,Happiness and Prosperity – Current Scenario , Method to Fulfill the Basic Human Aspirations ,Exploring Natural Acceptance

| **Module:2   Harmony in the Human Being** | **9 hours** |

Understanding Human being as the Co-existence of the Self and the Body, Distinguishing between the Needs of the Self and the Body, Exploring the difference of Needs of Self and Body. The Body as an Instrument of the Self. Understanding Harmony in the Self. Exploring Sources of Imagination in the Self. Harmony of the Self with the Body. Programme to ensure self-regulation and Health. Exploring Harmony of Self with the Body

| **Module:3   Harmony in the Family and Society** | **9 hours** |

Harmony in the Family – the Basic Unit of Human Interaction. Trust' – the Foundational Value in Relationship. Exploring the Feeling of Trust. 'Respect' – as the Right Evaluation.Exploring the Feeling of Respect.Other Feelings, Justice in Human-to-Human Relationship. Understanding Harmony in the Society. Vision for the Universal Human Order. Exploring Systems to fulfil Human Goal.

| **Module:4 Harmony in the Nature/Existence** | **9 hours** |

Understanding Harmony in the Nature. Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature. Exploring the Four Orders of Nature. Realizing Existence as Co-existence at All Levels. The Holistic Perception of Harmony in Existence Exploring Co-existence in Existence.

| **Module:5 Implications of the Holistic Understanding** | **9 hours** |

Natural Acceptance of Human Values. Definitiveness of (Ethical) Human Conduct. Exploring Ethical Human Conduct. A Basis for Humanistic Education, Humanistic Constitution and

Universal Human Order. Competence in Professional Ethics. Exploring Humanistic Models in Education. Holistic Technologies, Production Systems and Management Models-Typical Case Studies. Strategies for Transition towards Value-based Life and Profession. Exploring Steps of Transition towards Universal Human Order.

Total hours	45 hours

Text Book

1.	A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47

Reference Books

1.	JeevanVidya: EkParichaya, A Nagaraj, JeevanVidyaPrakashan, Amarkantak, 1999.
2.	Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3.	The Story of Stuff (Book).
4.	The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi.

Girijananda Chowdhury University, Assam
Skill Enhancement Course Syllabus

Course name	**Japanese Language & Culture (A1-1) for engineering students**
Course code	**JPL23102**
Lecturer's name and email ID	Nozomi Tokuma (Ms.) nozomitokuma@gcuniversity.ac.in
Level and credit points	A1 Starter *No prior knowledge is required 3 credits
Language of explanation	English and Japanese
Expected hours of study	30 hours per semester Taking MINATO online self-learning certificate courses as homework is also required.
Text book	The Japan Foundation. (2015). MARUGOTO Starter (A1) Katsudoo - Course book for communicative language Activities. Delhi: Goyal Publishers & Distributors Pvt. Ltd. ISBN: 9788183078054
Class size	Up to 25 students per class
Class room	417
Course objectives	The objectives of this course are to enable the students to… - Learners will learn about Japanese culture through learning how to communicate in Japanese. - Learners will discuss the differences and similarities in culture, way of thought, and customs in Japan and India. - This course aims to improve communication skills in Japanese. - Learners will learn basic reading and writing as well.
Course outcome	After successful completion of the course, the students will be able to…

	• Learners will get essential knowledge of the Japanese language and culture, such as sound system, basic writing system, basic grammar, manners, customs, etc., to help their further learning. • Learners will be able to manage day-to-day conversation comfortably and confidently in Japanese. • Learners learn about the scholarship programs for higher education in Japan. • Learners learn the possibility of working in Japan and Japanese companies in India.
Evaluation and Further information	<u>A minimum of 75% attendance, taking all the oral exams are required for the credit.</u> **Internal Evaluation (in total 50 marks)** Attendance 30% (30 marks) Homework 20% (20 marks) **End Semester Exam (in total 50 marks)** Oral Exam (15 minutes individually or paired) Session Exam 1 + Session Exam 2 + End Semester Exam = 50% (50 marks) *The oral exam includes: • Reading Hiragana words and sentences • Interview ❖ Good attendance is the key to successful learning. Kindly come regularly and be on time. ❖ More than 10 minutes late or early leave marked as absent. ❖ Learners are always required to switch off or manner mode on their phones.

Course layout

Week	Topics	Lesson
1	Orientation, Topic1 (Greetings, Classroom expressions), Numbers	1
2	Topic1 (Greetings, Classroom expressions), Time	2
3	Topic 2 (Simple self-introduction, Talk about family), Week	3
4	Session Exam1	
5	Topic 2 (Simple self-introduction, Talk about family)	4
6	Topic 3 (Talk about food) & Hiragana	5 & Hiragana
7	Topic 3 (Talk about food) & Hiragana	6 & Hiragana
8	Topic 1-3 revision and Hiragana practice	1-6

9	Session Exam2	
10	Topic 5 (Talk about daily routine), Reading Practice	9
11	Puja Vacation	
12	Topic 5 (Talk about daily routine), Reading Practice	10
13	Topic 4 (Talk about house)	7
14	Topic 4 (Talk about house)	8
15	Topic 1-5 revision and Hiragana practice	1-10
16	End Semester Exam	Lesson 1-10 Hiragana

End

AU	**Sports and Yoga**	L	T	P	C
		2	0	0	0

Prerequisite: Nil

Course Objectives:

1. To make the students understand the importance of sound health and fitness principles as they relate to better health.
2. To expose the students to a variety of physical and yogic activities aimed at stimulating their continued inquiry about Yoga, physical education, health and fitness.
3. To create a safe, progressive, methodical and efficient activity based plan to enhance improvement and minimize risk of injury.
4. To develop among students an appreciation of physical activity as a lifetime pursuit and a means to better health.

Course Outcome:

On successful completion of the course the students will be able:

1. To practice Physical activities and Hatha Yoga focusing on yoga for strength, flexibility, and relaxation.

2. To learn techniques for increasing concentration and decreasing anxiety which leads to stronger academic performance.

3. To learn breathing exercises and healthy fitness activities

4. To understand basic skills associated with yoga and physical activities including strength and flexibility, balance and coordination.

5. To perform yoga movements in various combination and forms.

6. To assess current personal fitness levels.

7. To identify opportModuleies for participation in yoga and sports activities.

8. To develop understanding of health-related fitness components: cardiorespiratory endurance, flexibility and body composition etc.

9. To improve personal fitness through participation in sports and yogic activities.

10. To develop understanding of psychological problems associated with the age and lifestyle.

11. To demonstrate an understanding of sound nutritional practices as related to health and physical performance.

12. To assess yoga activities in terms of fitness value.

13. To identify and apply injury prevention principles related to yoga and physical fitness activities.

14. To understand and correctly apply biomechanical and physiological principles elated to exercise and training.

Module:1 Introduction to Physical Education

Meaning & definition of Physical Education
Aims & Objectives of Physical Education
Changing trends in Physical Education

Module:2 Olympic Movement

Ancient & Modern Olympics (Summer & Winter)
Olympic Symbols, Ideals, Objectives & Values
Awards and Honours in the field of Sports in India (Dronacharya Award, Arjuna Award, Dhayanchand Award, Rajiv Gandhi Khel Ratna Award etc.)

Module:3 Physical Fitness, Wellness & Lifestyle

Meaning & Importance of Physical Fitness & Wellness
Components of Physical fitness
Components of Health related fitness
Components of wellness o Preventing Health Threats through Lifestyle Change
Concept of Positive Lifestyle

Module:4 Fundamentals of Anatomy & Physiology in Physical Education, Sports and Yoga
Define Anatomy, Physiology & Its Importance Effect of exercise on the functioning of Various Body Systems. (Circulatory System, Respiratory System, Neuro-Muscular System etc.)
Module:5 Kinesiology, Biomechanics & Sports
Meaning & Importance of Kinesiology & Biomechanics in Physical Edu. & Sports Newton's Law of Motion & its application in sports. Friction and its effects in Sports.
Module: 6 Postures
Meaning and Concept of Postures. Causes of Bad Posture. Advantages & disadvantages of weight training. Concept & advantages of Correct Posture. Common Postural Deformities – Knock Knee; Flat Foot; Round Shoulders; Lordosis, Kyphosis, Bow Legs and Scoliosis. Corrective Measures for Postural Deformities
Module: 7 Yoga
Meaning & Importance of Yoga Elements of Yoga o Introduction - Asanas, Pranayama, Meditation & Yogic Kriyas Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana & Shashankasana) Relaxation Techniques for improving concentration - Yog-nidra
Module: 8 Yoga & Lifestyle
Asanas as preventive measures. Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana. Obesity: Procedure, Benefits & contraindications for Vajrasana, Hastasana, Trikonasana, Ardh Matsyendrasana. Back Pain: Tadasana, Ardh Matsyendrasana, Vakrasana, Shalabhasana, Bhujangasana. Diabetes: Procedure, Benefits & contraindications for Bhujangasana, Paschimottasana, Pavan Muktasana, Ardh Matsyendrasana. Asthema: Procedure, Benefits & contraindications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottasana, Matsyasana.
Module: 9 Training and Planning in Sports
Meaning of Training Warming up and limbering down Skill, Technique & Style Meaning and Objectives of Planning. Tournament – Knock-Out, League/Round Robin & Combination.
Module:10 Psychology & Sports
Definition & Importance of Psychology in Physical Edu. & Sports Define & Differentiate Between Growth & Development Adolescent Problems & Their Management Emotion: Concept, Type & Controlling of emotions Meaning, Concept & Types of Aggressions in Sports. Psychological benefits of exercise. Anxiety & Fear and its effects on Sports Performance. Motivation, its type & techniques.

Understanding Stress & Coping Strategies.
Module:11 Doping
Meaning and Concept of Doping Prohibited Substances & Methods Side Effects of Prohibited Substances
Module:12 Sports Medicine
First Aid – Definition, Aims & Objectives. Sports injuries: Classification, Causes & Prevention. Management of Injuries: Soft Tissue Injuries and Bone & Joint Injuries
Module:13 Sports / Games
Following subtopics related to any one Game/Sport of choice of student out of: Athletics, Badminton, Basketball, Chess, Cricket, Kabaddi, Lawn Tennis, Swimming, Table Tennis, Volleyball, Yoga etc. History of the Game/Sport. Latest General Rules of the Game/Sport. Specifications of Play Fields and Related Sports Equipment. Important Tournaments and Venues. Sports Personalities. Proper Sports Gear and its Importance.
Text Book
1. Modern Trends and Physical Education by Prof. Ajmer Singh
Reference Books
1. Light On Yoga by B.K.S. Iyengar. 2. Health and Physical Education – NCERT (11th and 12th Classes)

HSMC	DIGITAL FABRICATION/ WORKSHOP /MANUFACTURING PRACTICES	L	T	P	C
		2	**0**	2	**3**

Module 1: Manufacturing Methods	**12 hours**

Lathe
Shaper, Planar, Slotting and Broaching Operations
Drilling
Milling
Grinding
Pattern making and Foundry

Module 2: Study of Electrical and Electronics component	**8 hours**

Study of Electronic Passive Components, Active Components, different types of Electronic Switches, Wires and Cables, neutral line and Grounding / Earthing System and its importance.

Module 3: Soldering Technique	**4 hours**

Study of Soldering Technique, Fabrication of DC Power Supply on General purpose PCB.

Module 4: Computer Network Tools	**2 hours**

Introduction to computer network. Study of various topologies. Preparing the network cable using crimping tools and connectors. Study of various network environments

Module 5: Hardware and Software: Identification of different hardware components, Computer Memory, Peripherals, Output Devices, Software, and Requirements**.**	**4 hours**

Introduction to operating system. Types of operating system (Windows and

Linux).Window:- Evolution of operating system. Introduction to software.

Types of software (MS office, VLC media player, Win rar), etc.Linux:-

Evolution of operating system. Introduction to software. Typesof software

(open office, web browser, etc.)

Total Lecture hours	**30 hours**

Text Book(s)

1. Elements of Workshop Technology", Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., "Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited,
2. Manufacturing Engineering and Technology", Kalpakjian S. And Steven S. Schmid , 4th edition, Pearson Education India Edition, 2002.
3. Fundamentals of Electrical Engineering and Electronics,BL Theraja, S. Chand Publishing
4. Computer Fundamentals: Architecture & Organization- Ram, B. 4th ed New Age
5. Computer Fundamentals: Concepts, Systems & Applications- Sinha, P. K. BPB

Reference Books

1.   Gowri P. Hariharan and A. Suresh Babu," Manufacturing Technology – I" Pearson
2. Education, 2008. 4. Roy A. Lindberg, "Processes and Materials of Manufacture", 4th
3. edition, Prentice Hall India, 1998. 5. Rao P.N., "Manufacturing Technology", Vol. I and
4. Vol. II, Tata McGraw Hill House, 2017.
5. Computer Fundamentals: Concepts, Systems & Applications, Sinha, P. K. BPB
6. Computer Graphics, Hearn, D/ Baker, M. PHI