GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
I– Semester

CourseTitle: **Mathematics**
(Course Code: 4300001)

Diploma program in which this course is offered	Semester in which offered
Automobile Engineering, Architecture Assistantship, Biomedical Engineering, Ceramic, Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Electronics &Communication Engineering, Environment Engineering, Fabrication Technology, Information Technology, Instrumentation & Control Engineering, Marine Engineering, Mechanical Engineering, Mechatronics Engineering, Metallurgy Engineering, Mining Engineering, Plastic Engineering, Power Electronics Engineering, Printing Technology, Textile Designing, Textile Manufacturing Technology, Textile Processing Technology, Computer Science & Engineering (All branches)	First

1.   RATIONALE

This course of Mathematics is being introduced as a foundation which will help students in developing competency and the requisite course outcomes in most of the Diploma Engineering programs. Components of Mathematics like Algebra, Geometry, Calculus, Computer computation work as a tool to describe physical phenomena and to evaluate the merit of different possible solutions. This course is an attempt to initiate the multi-dimensional logical thinking and reasoning capabilities. It will help the students to apply the basic principles of Mathematics to solve related technology problems. The course will give the students an insight to apply and analyse the Engineering problems scientifically based on the subject of Trigonometry, Differential Calculus and Basic elements of algebra and coordinate geometry to give a comprehensive coverage at an introductory level.

2.   COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:
    Solve broad-based technology problems using the principles of mathematics.

3.   COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:
   a) Interpret the function graphically, numerically and analytically**.**

   b) Demonstrate the ability to algebraically analyse basic functions used in Trigonometry.

   c) Demonstrate the ability to Crack engineering related problems based on concepts of Vectors**.**

d) Solve basic engineering problems under given conditions of straight lines and circle.

e) Demonstrate the ability to analyze and illustrate the Functions using the concept of Limit.

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Total Credits	Examination Scheme				
(In Hours)			(L+T+P/2)	Theory Marks		Practical Marks		Total Marks
L	T	P	C	CA	ESE	CA	ESE	
3	1	-	4	30*	70	-	-	100

(*):Out of 30 marks under the theory CA, 10 marks are for assessment of the micro-project to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for the assessing the attainment of the cognitive domain UOs required for the attainment of the COs.

Legends: L-Lecture; T – Tutorial/Teacher Guided Theory Practice; P -Practical; C – Credit, CA - Continuous Assessment; ESE -End Semester Examination.

5.   SUGGESTED PRACTICAL EXERCISES (During Tutorial Hours)
The following practical outcomes (PrOs) are the sub-components of the COs. *These PrOs need to be attained to achieve the Cos.*

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Solve given problems of Determinant up to order 3*3.	I	1
2	Use Open source mathematical software to demonstrate the graphs of given functions with its geometrical interpretation.	I	1
3	Use Open source mathematical software to display given logarithmic functions showing basic laws.	I	1
4	Solve the given examples based on conversion of units of Angles explaining the allied angles.	II	1
5	Crack given problems based on the concept of Compound Angles, Multiple and Submultiples angles.	II	1
6	Plot the graph of sine and cosine functions with help of Open source mathematical software and justify problems related to sum and factor formulae.	II	1
7	Use the concepts of Algebra to Solve given engineering related problems based on Magnitude of a vector.	III	1
8	Apply the concept of Dot Product to solve given engineering	III	1

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
	related problems.		
9	Explain the physical significance of the Cross Product and apply the concept to solve given engineering related problems.	III	1
10	Apply the concept of various forms of line, slope, intercept to solve simple problems.	IV	1
11	Use the concepts of equations of Parallel lines and Perpendicular lines to solve specified problems.	IV	1
12	Use the concept of Tangent and Normal to solve related engineering problems.	IV	1
13	Explain Limit of a function graphically and solve the specified problems.	V	1
14	Apply the Standard Formulae of Limit and crack the specified problems.	V	1
	Total		**14**

Note

i. More **Practical Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list**.**

ii. The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency.

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
	Geometric Thinking: Comprehend geometric concepts to prove theorems by applying apt results to solve well defined Engineering problems.	
1.	Experiment with transformations in the plane.	30
2.	Define trigonometric ratios and solve problems involving right triangles.	30
3.	Apply theorems about circles.	40
	Total	**100**

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
	Algebraic Thinking: Create, interpret, use, and analyze expressions, equations, and inequalities in a variety of contexts.	
1.	Represent, interpret, and solve variable expressions, equations, and inequalities.	60
2.	Write expressions in equivalent forms to solve problems.	40
Total		**100**

6.   MAJOR EQUIPMENT/ INSTRUMENTS AND SOFTWARE REQUIRED

These major equipment/instruments and Software required to develop PrOs are given below with broad specifications to facilitate procurement of them by the administrators/management of the institutes. This will ensure conduction of practical in all institutions across the state in proper way so that the desired skills are developed in students.

S. No.	Equipment Name with Broad Specifications	PrO.No.
1	Computer System & LCD Projector	2,3,6,10,13
2	Scientific Calculator (Display type: Natural Display Algebraic input logic: Natural V.P.A.M. Significand function: 10+2.	1,5,10

7.   AFFECTIVE DOMAIN OUTCOMES

The following *sample* Affective Domain Outcomes (ADOs) are embedded in many of the above-mentioned COs and PrOs. More could be added to fulfill the development of this course competency.

a) Work as a leader/a team member.

b) Follow ethical practices.

c) Practice environmentally friendly methods and processes. (Environment related)

The ADOs are best developed through the laboratory/field-based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

i. 'Valuing Level' in 1st year

ii. 'Organization Level' in 2nd year.

iii. 'Characterization Level' in 3rd year.

8. UNDERPINNING THEORY

The major underpinning theory is given below based on the higher level UOs of *Revised Bloom's taxonomy* that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit – I **Determinant and Function**	1a. Solve simple problems of Determinant up to order 3*3. 1b. Explain graphically the given functions. 1c. Solve simple problems using concepts of Logarithms	1.1 Determinant and its value up to 3rd order (Without properties) 1.2 Function and simple examples. 1.3 Logarithm as a function 1.4 Laws of Logarithm and related Simple examples
Unit– II **Trigonometry**	2a. Apply the concept of Compound angle, Allied angle, and Multiple angles to solve the given simple engineering problem(s) 2b. Explain the concept of Sub-Multiple and solve related problem(s). 2c. Invoke the concept of Sum and Factor formulae to solve the given simple problem(s) 2d. Investigate given simple problems using inverse Trigonometric functions.	2.1 Units of Angles (degree and radian) 2.2 Trigonometric Functions 2.3 Allied & Compound Angles, Multiple –Submultiples angles 2.4 Graph of Sine and Cosine, 2.5 Periodic Trigonometric function 2.6 Sum and factor formulae 2.7 Inverse Trigonometric function
Unit– III **Vectors**	3a. Apply the concept of algebraic operations of Vectors to solve given simple engineering problem(s) 3b. Apply the concept of Scalar and Vector product to solve specified simple problem(s) 3c. Solve problems of work done and moment of force using the concept of Vectors.	3.1 Vector, Addition, Subtraction, Magnitude and direction. 3.2 Scalar and Vector Product and it's properties 3.3 Angle between two Vectors 3.4 Applications of Scalar and Vector Product (Work Done and Moment of Force)
Unit– IV **Coordinate Geometry**	4a. Employ the equation of straight line to solve given simple problems. 4b. Apply the concept of slope and its consequences to	4.1 Straight line (Two-point form) and slope of straight line 4.2 Slope point form, Intercept form, General form of line 4.3 Condition of parallel and

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
	solve the given problems. 4c. Find the angle between two lines using the concept of Parallel and Perpendicular lines. 4d. Apply the concept of equation of circle with center and radius to solve the given problems. 4e. Solve problems related to general equation of circle based on tangent and normal.	perpendicular lines 4.4 Equations of Parallel lines and Perpendicular lines to the given lines 4.5 Angle between two lines. 4.6 Equation of circle with center and Radius. 4.7 General equation of circle. 4.8 Tangent and normal to a circle.
Unit– V **Limit**	5a. Analyse the characteristic of functions using the concept of Limit. 5b. Solve the given problems using standard formulae of Limit	5.1 Limit of a Function. 5.2 Standard formulae of Limit and related simple examples.

Note: The Unit Outcomes (UOs) need to be formulated at the 'Application Level' and above of Revised Bloom's Taxonomy' to accelerate the attainment of the COs and the competency.

9. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Determinant and Function	9	4	7	5	16
II	Trigonometry	12	4	5	5	14
III	Vectors	7	4	6	4	14
IV	Coordinate Geometry	8	4	5	5	14
V	Limit	6	3	4	5	12
	Total	42	**19**	**27**	**24**	**70**

Legends: R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)

Note: This specification table provides general guidelines to assist students for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions to assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may slightly vary from above table.

10.   SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

a) Identify engineering problems based on real world problems relevant to content of the unit and solve these problems in the light of free tutorials available on the internet.
b) Explore the opportunity to visit Science city, ISRO or nearby Science centres.
c) Explore the opportunity to visit Mathematics Lab Virtually.
d) Prepare charts showing formulas of multiple and sub multiple trigonometric functions.
e) Use Graphing calculator to plot the graph of functions showing Engineering applications.
f) Collect set of problems based on concept of limit with real world applications and make a presentation.
g) Communicate mathematical thinking coherently and clearly to other students, peers, and others.

11.   SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a) Massive open online courses (*MOOCs*) may be used to teach various topics/sub topics.
b) Guide student(s) in undertaking micro-projects.
c) *'L" in section No. 4*means different types of teaching methods that are to be employed by teachers to develop the outcomes.
d) About **20% of the topics/sub-topics** which are relatively simpler or descriptive in nature is to be given to the students for **self-learning**, but to be assessed using different assessment methods.
e) With respect to **section No.10**, teachers need to ensure to create opportunities and provisions for *co-curricular activities*.
f) Explore the possibility for understanding the Biosphere through Mathematics
g) Guide students for using data manuals.

12.SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project are group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of students in the group should **not exceed three.**

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more

COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The duration of the microproject should be about **14-16** *(fourteen to sixteen) student engagement hours* during the course.The students ought to submit micro-project by the end of the semester (so that they develop the industry-oriented COs).

      A suggestive list of micro-projects is given here. This should relate highly with competency of the course and the COs. Similar micro-projects could be added by the concerned course teacher:

    a) Draw graphs of given Functions like $2x-1, x^2, \sin x, \cos x$ etc and verify using suitable Open-source software like GeoGebra, DPLOT and GRAPH.

    b) Prepare the Charts of formulae for limit, Vector, Trigonometry, Co-ordinate Geometry, and Logarithm.

    c) Prepare the cardboard models based on Mathematical concepts.

    d) Draw various lines, circles using GeoGebra software.

    e) Prepare projects on height and distance using Trigonometry.

    f) Use PHET website for simulation of Vector Algebra.

    g) Prepare a presentation/seminar on any relevant topic of interdisciplinary nature.

    h) Prepare a write up on the Historical path of Calculus.

    i) Prepare models of graphical representation for the existence of limits of given functions.

    j) Prepare charts showing formulas of multiple and sub multiple trigonometric functions and its usefulness.

    k) Formulate models to describe mathematical relationships and analyze data.

13.SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1	Engineering Mathematics (Third edition).	Croft, Anthony	Pearson Education, New Delhi, 2014. ISBN 978-81-317-2605-1
2	A Text Book of Vector Analysis	Narayan Shanti and Mittal P.K	S. Chand Publication, ISBN 978-8121922432
3	Calculus and Analytic Geometry	G. B. Thomas, R. L. Finney	Addison Wesley, 9th Edition, 1995. ISBN 978-8174906168
4	Understanding Engineering Mathematics	John Bird	Routledge; 1st edition ISBN 978-0415662840
5	Advanced Engineering Mathematics	Krezig, Ervin	Wiley Publ., New Delhi,2014, ISBN: 978-0-470-45836-5

14. SUGGESTED LEARNING WEBSITES

a. https://www.youtube.com/channel/UCLJVrQyPYsseCf78QWCDsvA/featured

   (YouTube Channel of DTEGUJ)

b. https://www.geogebra.org/?lang=en

c. https://phet.colorado.edu/

d. www.dplot.com/ - DPlot

e. www.wolfram.com/mathematica/

f. https://www.khanacademy.org/

g. www.easycalculation.com

i. www.scilab.org/ - SCI Lab

j. https://cnx.org/contents/cCXsMC7-@3.2:rOtjgdjI@5/Trigonometry

k. https://www.embibe.com/exams/real-life-applications-of-trigonometry

l. https://opentextbc.ca/calculusv1openstax/chapter/the-limit-of-a-function

m. https://www.accessengineeringlibrary.com/?implicit-login=true

15. PO-COMPETENCY-CO MAPPING

Semester I	Mathematics (Course Code: 4300001)						
	POs and PSOs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/ development of solutions	PO 4 Engineering Tools, Experimentation &Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Management	PO 7 Life-long learning
Competency *Solve broad-based technology problems using the principles of mathematics.*	3	2	1	-	-	-	1
Course Outcomes CO a) Interpret the function graphically, numerically and analytically.	3	2	1	-	-	-	-
CO b) Demonstrate the ability to algebraically analyze basic functions used in Trigonometry.	3	1	1	-	-	-	1
CO c) Demonstrate the ability to Crack engineering related problems based on concepts of Vectors.	3	1	1	-	-	-	1
CO d) Solve basic engineering problems under given conditions of straight lines and circle.	3	1	-	-	-	-	-
CO e) Demonstrate the ability to analyze and illustrate the Function using the concept of Limit.	3	-	-	-	-	-	-

Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.

16. COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

S. No.	Name and Designation	Institute	Contact No.	Email
1	Dr. N. R. Pandya I/C Principal (Retired) Head of Department	Government Polytechnic, Kheda	9099097990	nrpandyagp@gmail.com

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NITTTR Resource Person

S. No.	Name and Designation	Department	Contact No.	Email
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GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
I– Semester

Course Title: **COMMUNICATION SKILLS IN ENGLISH**
(Course Code: 4300002)

Diploma programme in which this course is offered	Semester in which offered
ALL BRANCHES	FIRST

1.   RATIONALE

Language is the most commonly used medium of self-expression in all spheres of human life – personal, social and professional. English language has become a dire need to deal successfully in the globalized and competitive market. Competency in English is need of the hour, not only for Indian industry, but also worldwide, where diploma engineers have the employable opportunity. Therefore, the basic English skills- listening, speaking, reading and writing have become almost mandatory for employability. This course intends to make the students to develop comprehension skills, improve vocabulary, use proper grammar, acquire writing skills, correspond with others and enhance skills in spoken English. Further, it is expected that each polytechnic will provide conducive environment for acquiring proficiency in communication skills among the students through English language.

2.   COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- **Use reading, writing, speaking, listening skills to communicate effectively in English**

3.   COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with the identified competency are to be developed in the student for   the achievement of the following COs:

- Use strategies to minimise barriers of effective communication.
- Construct grammatically correct sentences.
- Develop reading and listening skills in terms of fluency and comprehensibility.
- Compose different types of written communication.
- Communicate orally in a given situation with a purpose.

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P/2)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	CA	ESE	CA	ESE	
2	-	2	3	30*	70	25	25	150

(*): Out of 30 marks under the theory CA, 10 marks are for assessment of the micro-project to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be

taken during the semester for the assessing the attainment of the cognitive domain UOs required for the attainment of the COs.

Legends: L-*Lecture;* **T** – *Tutorial/Teacher Guided Theory Practice;* **P** - *Practical;* **C** – *Credit,* **CA** - *Continuous Assessment;* **ESE** - *End Semester Examination.*

5.   SUGGESTED PRACTICAL EXERCISES

The following practical outcomes (PrOs) are the sub-components of the COs. *Some of the* **PrOs** *marked* **'*'** *are compulsory, as they are crucial for that particular CO. These PrOs need to be attained at least at the 'Precision Level' of Dave's Taxonomy related to 'Psychomotor Domain'.*

S. No.	Practical Outcomes (PrOs)	Unit No.		Approx. Hrs. required
1	Make correct sentences using tenses.	II		02
2	Compose Syntactical statements in written and Oral Communication (especially Formal Communication).	II	Any two	02
3	Make meaningful sentences using confusing words..	II		02
4	Develop listening skills through listening to recorded lectures, poems, interviews and speeches.	III		02*
5	Use antonyms and synonyms effectively in oral and written forms.	III, IV		02*
6	Use grammatically correct sentence	IV		01
7	Communicate ideas effectively and fluently in oral and written communication.	IV, V		02*
8	Apply idioms and one word substitute effectively in oral and written forms of communication.	IV, V		01
9	Articulate vowels, consonants and diphthongs correctly.	V		02*
10	Syllable and Syllable Stress	V		02
11	Speak with appropriate intonation, voice modulation, pitch, speed and volume.	V		02
12	Participate in conversations (GD /meetings etc.)	V		02*
13	Deliver the presentation effectively in the class.	V		02*
14	Communicate effectively through verbal and non-verbal means of communication.	V		02*
15	Practice online exercises for listening and reading comprehension.	V		02*
16	Perform role play and mock interview	V		02
	Total			**28**

Note

i. *More* ***Practical Exercises*** *can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.*
ii. *The following are some* ***sample*** *'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed* ***Practical Exercises*** *of this course required which are embedded in the COs and ultimately the competency.*

Oral Communication

Each student performance will be evaluated on the basis of the sample Performance Indicators given below:

S. No.	Sample Performance Indicators for the PrOs (Oral communication)	Weightage in %
1	Pronunciation	20
2	Use of language (simple or decorated language)	20
3	Syntax (Sub-Verb Agreement, types of sentences, Modals etc.)	20
4	Use of appropriate Vocabulary	15
5	Fluency (Ease and speed of the flow of speech)	15
6	Audibility	10
Total		**100**

Written Communication

Each student performance will be evaluated on the basis of the sample Performance Indicators given below:

S.No.	Sample Performance Indicators for the PrOs (Written communication)	Weightage in %
1	Content(ideas expressed)	25
2	Use of language (Organisation of the content)	20
3	Grammar - Syntax (Sub-Verb Agreement) - Diction (choice and use of words) - Control of the basic grammatical patterns	20
4	Style - Choice of sentence structures - Use of appropriate sentence structures	20
5	Mechanics (Use of punctuations, Capitalization, paragraphing, italicizing)	15
Total		**100**

Listening skills

Each student performance will be evaluated on the basis of the sample Performance Indicators given below:

S.No.	Sample Performance Indicators for the PrOs (Listening skills)	Weightage in %
1	Enthusiasm for patient listening	15
2	Attentive listening	20
3	After listening, each student has to summarize - Accuracy of facts and figures. - Description of places and situations.	40
4	Para- phrasing of the listened texts.	25
Total		**100**

Reading Skills

Each student performance will be evaluated on the basis of the sample Performance Indicators given below:

S.No.	Sample Performance Indicators for the PrOs (Reading Skills)	Weightage in %
1	Reading correctly with clarity	30
2	Correct pronunciation	20
3	Comprehension of a vocabulary and deriving meaning of information	15
4	Reading speed	20
5	Drawing correct conclusion and valid inference	15
Total		**100**

6.   MAJOR EQUIPMENT/ INSTRUMENTS AND SOFTWARE REQUIRED

These major equipment/instruments and Software required to develop PrOs are given below with broad specifications to facilitate procurement of them by the administrators/management of the institutes. This will ensure conduction of practical in all institutions across the state in proper way so that the desired skills are developed in students.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1	Computer systems windows 7 or above with internet connectivity	All
2	Headphones with speakers	All
3	LCD Projector	All
4	Language lab software	All

7.   AFFECTIVE DOMAIN OUTCOMES

The following *sample* Affective Domain Outcomes (ADOs) are embedded in many of the above mentioned COs and PrOs. More could be added to fulfill the development of this course competency.

a) Work well as a leader/a team member.
b) Follow ethics
c) Demonstrate human concern.

The ADOs are best developed through the laboratory/field based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy'

should gradually increase as planned below:

i.   'Valuing Level' in 1st year
ii.   'Organization Level' in 2nd year.
iii. 'Characterization Level' in 3rd year.

8.   UNDERPINNING THEORY

The major underpinning theory is given below based on the UOs of *Revised Bloom's taxonomy* that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)		Topics and Sub topics
	Writing Skills	**Speaking Skills**	
Unit 1 **Theory of Communi- cation**	1a. Define the theory of communication 1b. State different types of communication. 1c. Explain barriers in communication	1d. Communicate effectively	**1.1** Concept of effective communication and communication skills **1.2** Basic communication model(S+M+C+R+F) **1.3** Types of communication **1.4** Barriers of effective communication
Unit 2 **Grammar**	2a. Identify different parts of speech and their usage in the sentence.	2f. Choose appropriate parts of speech for day to day communication.	**2.1 Parts of Speech** Noun, Pronoun, Verb, Adjective, Adverb and Interjection- Meaning and Examples (Recapitulation) Prepositions- In, into, On, At, for, Since, between, among, to, towards Connectors - If, Unless, Otherwise, Because, Therefore, Who, Which, Where, When, Why.
	2b. Apply correct verbs in the given sentence	2g. Use grammatically correct sentence in day to day communication	**2.2 Tenses** **2.2.1 Present Tense** (Simple, Continuous, Perfect, Perfect Continuous) **2.2.2 Past Tense** (Simple, Continuous, Perfect) **2.2.3 Future Tense** (Simple)
	2c. Use appropriate Modal Auxiliaries in a given expression.	2h. Choose appropriate Modals in situations where different modes of expressions are used.	**2.3 Modal Auxiliaries** (Can, Could, May, Might, Shall, Should, Will, Would, Must, Have to, Ought to)

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)		Topics and Sub topics
	Writing Skills	Speaking Skills	
	2d. Choose the correct verb for the given subject.	2i. Use the correct verb depending on the subject in a sentence.	**2.4 Subject- Verb Agreement**
	2e. Identify basic sentence patterns of English and form sentences in correct word order.	2j. Use correct word order in their speech.	**2.5 Basic Sentence Patterns of English** (Explanation of S, V,O,A,C) S-Subject, V-Verb, O-Object, A-Adverbial and C- Complement Four Basic Sentence Patterns • S+V • S+V+O • S+V+A • S+V+C
Unit 3 **Prose and Poetry**	3a. Realise the central idea of the literary piece. 3b. Formulate sentences using new words. 3c. Enrich vocabulary through reading. 3d. Write short as well as long answers to questions. 3e. Express ideas in English in written form effectively	3f. Explain the content of the passage/story in the class. 3g. Ask appropriate questions as well to answer them. 3h. Follow oral instructions and interpret them to others. 3i. Present topics effectively and clearly. 3j. Use dictionary, thesaurus and other reference books. 3k. Describe an object or product. 3l. Use correct pronunciation and intonation. 3m. Give instructions orally.	**3.1. Prose** The Leopard- Ruskin Bond **3.2. Short Story** After Twenty Years- O Henry **3.3. Poetry** • Stopping by Woods on Snowy Evening-Robert Frost • Where the Mind is Without Fear-Rabindranath Tagore **3.4 Language components:** Language components should be integrated with: • Passages from text book/Work book. • Unseen passages Reading with correct pronunciation.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)		Topics and Sub topics
	Writing Skills	Speaking Skills	
			3.5 Vocabulary Items: • Matching items (Word and its Meaning) • One-Word Substitution • Phrases and Idioms • Synonyms and Antonyms

Unit 4
 	
 Techniques of Writing
	4a. Compose emails on given topics/ situations.
	 4b. Write a paragraph in words with synchronized sentence structure on the given situation / topic.
	 4c. Answer the questions on the given unseen passage.
	 4d. Summarize the given unseen passage .
		4e. Face oral examinations and interviews.
		 4f. Grasp the main idea of any conversation and communicate accordingly.
			4.1 Email Writing (Business)
			 Format and Sample
			 Enquiry, Orders and complaints
			 Examples for Practice
			 4.2 Letter writing
			• Types of letters,
			• Formats of Letters
			• Qualities of a good letter
			  • Sample letters such as:
			  - Job applications/ Cover Letter
			  - Leave applications, Complaints,
			  - Purchase orders, Enquiries replies etc.

Unit 5 **Mechanics of Speaking**	5a. Develop a welcome and farewell speech for the given theme/ situation. 5b. Prepare a speech for introducing a guest in the given situation. 5c. Make a weather report for the given condition .	5d. Introduce oneself with correct pronunciation, intonation, using verbal and non-verbal gestures. 5e. Speak in specified formal situations with correct pronunciation. 5f. Speak in specified informal situations with correct	**5.1 Public speaking** • Basics of Speaking • Importance of public speaking • Characteristics of good speech **5.2 Samples for Practice:** • Welcome speech • Farewell speech • Introducing oneself and another. • Discussing Weather • Disposal of E -Waste

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)		Topics and Sub topics
	Writing Skills	**Speaking Skills**	
		pronunciation.	• Environmental protection through non-use of Plastic • Reduction of Noise pollution by vehicles. • Conversation with the Cashier- College/ bank • Telephonic Conversations (Formal and Informal).

9.   SUGGESTED SPECIFICATION TABLE FOR QUESTIONPAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A	Total Marks
I	Theory of Communication	04	03	04	03	10
II	Grammar	10	07	14	06	27
III	Prose and Poetry	09	04	07	08	19
IV	Techniques of Writing	05	03	04	07	14
V	Mechanics of Speaking	0	-	-	-	-
Total		**28**	**17**	**29**	**24**	**70**

Legends: *R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)*

Note: *This specification table provides general guidelines to assist students for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions to assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may slightly vary from above table.*

10   SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

• The experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency.
• Initiating a conversation with a new comer to your college.
• Assignments using Internet. (Online Listening/Speaking/Vocabulary based exercises and uploading their score, etc. (Teacher can decide how to use various online platforms for evaluation purpose.

- Self-learning Activities using mobile apps/internet
- Discuss current affairs in English with your friends.
- Read storybooks and learn new words and sentence structures.
- Write a brief report on current environmental issues.

11.   SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a) Massive open online courses (**MOOCs**) may be used to teach various topics/sub topics.
b) Guide student(s) in undertaking micro-projects.
c) Comprehension of passage and making presentation can given to the students for *self-learning*, but to be assessed using different assessment methods.
d) Guide students on how to address issues on environment and sustainability using the knowledge of this course

12.   SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project are group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of students in the group should **not exceed three**.

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The duration of the microproject should be about **14-16 (fourteen to sixteen) student engagement hours** during the course. The students ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This should relate highly with competency of the course and the COs.Similar micro-projects could be added by the concerned course teacher:

a) Book review – students should read a book and then write his reviews about the book and present it in the class.
b) Presentation – Prepare a presentation regarding current problems of environment and present it in the class,
c) Mock interviews. – Interviews conducted by students and for the students.
d) Skit or role play- write the script and present it in the class
(can be asked to take topic related to environment and pollution)
e) Find out 20 new words out of a given story, write its synonym and use the word in your own sentence.
f) Draft a story according to a given picture.
g) You are in the village fair. Describe what is happening around you in present continuous tense. (Celebration of Annual Day – past tense. etc)
h) Write a paragraph about your first day in college.

13.   SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1	Living English Structures	W. S. Allen	Pearson Education India 1992 ISBN: 9788131728499
2	Essentials of English Grammar and Composition	N. K. Aggrawal	Goyal Brothers Prakashan 2015 ISBN : 8183896162
3	English Grammar at Glance	M. Gnanamurali	S. Chand & Co. Ltd. 2010 ISBN : 9788121929042
4	Effective English	E. Suresh Kumar & Others	Pearson 2010 ISBN : 9788131731000
5	English Communication for Polytechnics	S. Chandrashekhar & Others	Orient BlackSwan 2013 ISBN : 8125037462
6	English Fluency Step 1 & 2	-	Macmillan 2010 ISBN : 9781405003650 9781405003667
7	Active English Dictionary	-	Longman 1991 ISBN : 8131707865
8	The Pronunciation of English	Daniel Jones	Cambridge: Cambridge University Press, 4th Edition 1956 ISBN : 0521093694
9	Ed. English Pronouncing Dictionary	James Hartman & et al.	Cambridge: Cambridge University Press.17th Edition 2006 ISBN : 0521680867
10	Effective Communication Skills	Kulbhushan Kumar	Khanna Publishing House, New Delhi (Revised Ed. 2018) ISBN : 9789382609940
11	Better English Pronunciation	J.D.O'Connor	Cambridge: Cambridge University Press 1982 ISBN : 0521231523
12	An English Grammar: Comprehending Principles and Rules	Lindley Murray	Franklin Classics (10 October 2018). ISBN : 0342097008
13	Examine your English	Margaret M. Maison	Orient Longman: New Delhi, 1964 ISBN : 812500176X
14	A Practice Course in English Pronunciation	J.Sethi & et al	New Delhi: Prentice Hall, 2004 ISBN : 9788120325944
15	Technical Communication: A Practical Approach.	Pfeiffer, William Sanborn and T.V.S Padmaja	Delhi: Pearson, 2007. ISBN : 9788131700884

14.   SUGGESTED LEARNING WEBSITES

* https://learnenglish.britishcouncil.org
* http://www.free-english-study.com/
* http://www.english-online.org.uk/course.htm
* http://www.english-online.org.uk/
* http://www.talkenglish.com/
* http://www.learnenglish.de/
* https://www.cambridgeenglish.org/exams-and-tests/linguaskill/
* https://dictionary.cambridge.org/dictionary/english/
* https://www.oxfordlearnersdictionaries.com/definition/academic/
* https://learnenglishkids.britishcouncil.org/

15.   PO-COMPETENCY-CO MAPPING

Semester I	Communication Skills in English (Course Code: 4300002)						
	POs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/ develop-ment of solutions	PO 4 Engineer-ing Tools, Experimen-tation & Testing	PO 5 Engineering practices for society, sustain-ability & environment	PO 6 Project Manage-ment	PO 7 Life-long learning
Competency	Use reading, writing, speaking, listening skills to communicate effectively in English						
Course Outcomes Students will be able to: CO a). Use strategies to minimise barriers of effective communication	-	-	-	-	-	2	2
CO b) Construct grammatically correct sentences.	2	-	-	-	-	2	2
CO c) Develop reading and listening skills in terms of fluency and comprehensibility	1	-	-	-	-	-	1
CO d) Compose different types of written communication.	2	-	-	-	-	2	2
CO e) Communicate orally in a given situation with a purpose.	2	-	-	-	-	2	2

Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.

16.   COURSE CURRICULUM DEVELOPMENT COMMITTEE

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GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA PROGRAMME

IN

ENGINEERING AND TECHNOLOGY

WORKBOOK

OF

COMMUNICATION SKILLS IN ENGLISH

IMPORTANT NOTE:

This workbook is prepared for purely academic purpose only. The authors have used various open web sources and books for content creation. The aim is to help students by providing them learning material and ample exercises for practice. This book is designed for smooth functioning of the course. The content of this text must not be used for any kind commercial purpose.

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INDEX

SECTION 1

THEORY OF COMMUNICATION

What are communication skills?

Definition:

Communication skills are the abilities you use when giving and receiving different kinds of information. Some examples include communicating new ideas, feelings or even an update on your project. Communication skills involve listening, speaking, observing and empathising. It is also helpful to understand the differences in how to communicate through face-to-face interactions, phone conversations and digital communications like email and social media.

A deep understanding of the process of communication and communication skills is essential. It is vital to the success of any individual in any business. Here we shall see some of the many types of communication.

Communication styles change from person to person. During the process of communication, a person may invoke several channels or modes or methods to convey a message. But, the process of communication doesn't only depend on the source producing or relaying information.

It also equally depends on the communication method and the manner in which the receiver understands the message. Let us first understand Basic Model Of Communication

Basic Communication Model :

The sender-message-channel-receiver (SMCR) model of communication is an expansion of the Shannon-Weaver model of communication. David Berlo created this model.

According to the Shannon-Weaver model, communication includes the following concepts: sender, encoder, channel, decoder, receiver and feedback. Furthermore, there is also concept of "noise", which affects the communication process going through the channel and makes the message more difficult to understand by the receiver. Each of those concepts are defined as follows:

Sender: the originator of message.

Encoder: the transmitter which converts the message into signals (the way message is changed into signals, for example sound waves).

Channel: the signal carrier or medium

Decoder: the reception place of the signal which converts signals into message. Decoding is done by the receiver when he gets the message.

Receiver: the recipient of the message from the sender. He usually gives feedback to the sender in order to make sure that the message was properly received.

Noise the message, transferred through a channel, can be interrupted by external noise (for instance, conversation may be interrupted by thunder or crowd noise).
Feedback: The receiver can get an inaccurate message. This is why feedback from the receiver is important in case the message is not properly received. Furthermore, the noise can also affect the decoding of the message by the receiver.
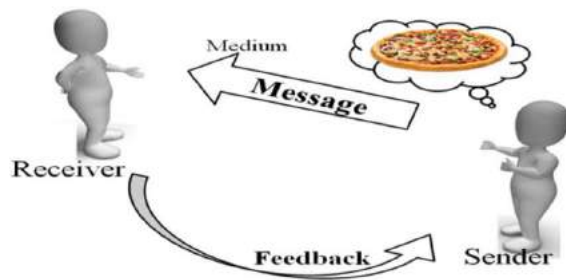
Communication begins at a given point. The first step is the generation of information. The second step is to put this information or data into a medium for transmission towards the intended audience.

During this process, the initiator of the communication must pay extra attention to the nature of the information. The communication skills will determine the effectiveness of their communication.

Types:

On the basis of the communication channels, types of communications are:

A. Verbal

B. Non-Verbal

C. Visual

Verbal

This involves the use of language and words for the purpose of passing on the intended message. In general terms, Verbal Communication means communication in the form of spoken words only. But, in the context of types of communication, verbal communication can be in the spoken or the written form. Thus, the verbal form may be oral or written as discussed below.

- **Written Communication:** This kind of communication involves any kind of exchange of information in the written form. For example, e-mails, texts, letters, reports, SMS, posts on social media platforms, documents, handbooks, posters, flyers, etc.

- **Oral Communication:** This is the communication which employs the spoken word, either direct or indirect as a communication channel. This verbal communication could be made on a channel that passes information in only one form i.e. sound. You could converse either face to face, or over the phone, or via voice notes or chat rooms, etc. It all comes under the oral communication. This form of communication is an effective form.

Non-Verbal Communication

In this type of communication, messages are relayed without the transmission of words. The messages here are wordless messages. This form of communication mainly assists verbal communication. It supplements it with gestures, body language, symbols, and expressions.

Through these, one may communicate one's mood, or opinion or even show a reaction to the messages that are relaying. One's non-verbal actions often set the tone for the dialogue. You can control and guide the communication if you control and guide the non-verbal communication. Some of the modes of non-verbal communication are:

Physical Non-verbal Communication

This is the sum total of the physically observable. For instance, hand gestures, body language, facial expressions, the tone of one's voice, posture, stance, touch, gaze, and others. Several researchers have revealed that physical nonverbal communication constitutes about 55% of our daily communications.

These are subtle signals that are picked up as part of our biological wiring. For example, if you rest your head on your palms, it will mean that you are very disappointed or angry. Similarly, other subtle hints will convey your reaction to the presenter or your audience's reaction to you.

Paralanguage

This is the art of reading between the lines. The main kind of such communication is done with the tone of one's voice. This kind of communication amounts to almost 38% of all the communication that we do every day. Along with the tone of voice, the style of speaking, voice quality, stress, emotions, or intonation serves the purpose of communication. And, these aspects are not verbal.

Visual:

Visual communication is the transmission of information and ideas using symbols and imagery. It is one of three main types of communication, along with verbal communication (speaking) and non-verbal communication (tone, body language, etc.). Visual communication is believed to be the type that people rely on most, and it includes signs, graphic designs, films, typography, and countless other examples. Visual communication can be represented in the form of a graph, a map, a chart, a Vann diagram, a pie chart, a model, a table, or even multimedia like gifs, videos, and images.

Barrier To Communication:

There are many reasons why interpersonal communications may fail. In many communications, the message (what is said) may not be received exactly the way the sender intended. It is, therefore, important that the communicator seeks feedback to check that their message is clearly understood.

The skills of Active Listening, Clarification and Reflection may help but the skilled communicator also needs to be aware of the barriers to effective communication and how to avoid or overcome them.

There are many barriers to communication and these may occur at any stage in the communication process. Barriers may lead to your message becoming distorted and you therefore risk wasting both time and/or money by causing confusion and misunderstanding.

Effective communication involves overcoming these barriers and conveying a clear and concise message. Common Barriers to Effective Communication:

- The use of jargon. Over-complicated, unfamiliar and/or technical terms.

- Emotional barriers and taboos. Some people may find it difficult to express their emotions and some topics may be completely 'off-limits' or taboo. Taboo or difficult topics may include, but are not limited

- to, politics, religion, disabilities (mental and physical), racism and any opinion that may be seen as unpopular.
- Lack of attention, interest, distractions, or irrelevance to the receiver. Differences in perception and viewpoint.
- Physical disabilities such as hearing problems or speech difficulties.
- Physical barriers to non-verbal communication. Not being able to see the non-verbal cues, gestures, posture and general body language can make communication less effective. Phone calls, text messages and other communication methods that rely on technology are often less effective than face-to-face communication.
- Language differences and the difficulty in understanding unfamiliar accents.
- Expectations and prejudices which may lead to false assumptions or stereotyping. People often hear what they expect to hear rather than what is actually said and jump to incorrect conclusions.
- Cultural differences. The norms of social interaction vary greatly in different cultures, as do the way in which emotions are expressed. For example, the concept of personal space varies between cultures and between different social settings.
- A skilled communicator must be aware of these barriers and try to reduce their impact by continually checking understanding and by offering appropriate feedback.

Note: MCQs of 07 Marks to be asked from this Unit in GTU Exam so practice MCQS.

Practice Questions:

1) What is communication?

 a. Communication is the means by which we stay in touch with other people and know what is happening in the world around us

 b. Communication is the expression of ourselves in the form of verbal discussion

c. Communication is the varying ways in which we express ourselves

d. Communication is the various mediums we use for interaction

e. Communication is talking, listening, and interacting

2) True of False: All communication is verbal

a. True

b. False

3) What is non-verbal communication?

a. Non-verbal communication is another term for using body language

b. Non-verbal communication is about exchanging information without speaking words

c. Non-verbal communication is another term for written communication

d. Non-verbal communication is for people who cannot speak or hear

4)Which of the following is NOT a form of non-verbal communication?

 a. Touch

b. Facial expressions

c. Physical proximity

d. Skype

e. Sign language

5) Which of the following is an example of body language?

 a. Facial expression

b. Eye contact

c. Posture

d. Gestures

e. All of the above

6) What is paralanguage?

 a. Language for the disabled

 b. How something is said, rather than what is said

c. What is said, rather than how it is said

d. When how something is said matches what is being said

e. When how something is said does not match what is being said

7) Factors that influence communication, may become what to effective communication?

 a. Barriers

 b. Obstacles

c. Enhances

d. Improvements

e. Challenges

8) How will you know if communication was successful?

a. The person smiles and gives open body language

 b. The person answers
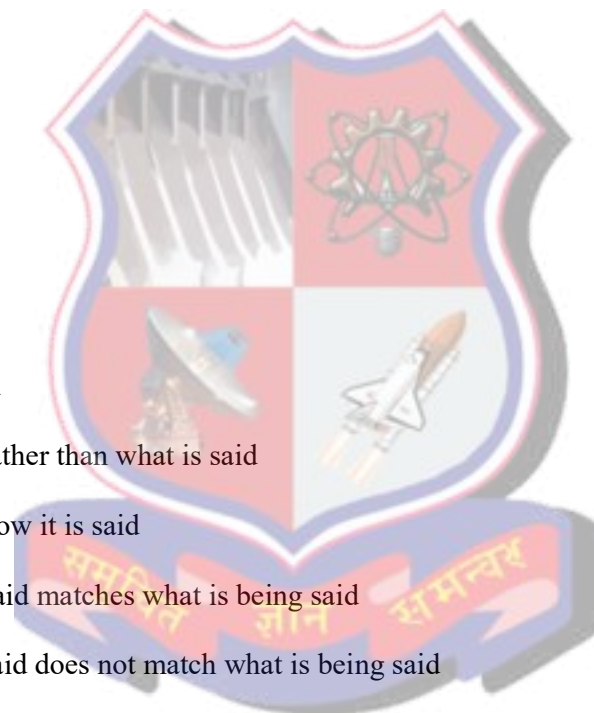
c. It has the desired outcome

d. The person is agreeable

e. The person tells you

9) What does effective communication require?

a. Purpose or reason

b. Strategy or way of communicating

c. Acknowledgement

d. Feedback

e. All of the above

10) What is efficient communication?

a. Talking quickly and using minimal words to get the point across

b. Spending the minimum amount of time and effort to get the communication message across successfully

c. Ensuring that the message is understood and being thorough enough to get the point across

d. Being able to convey a message with just body language and gestures

e. Being able to use jargon and abbreviations while still being understood
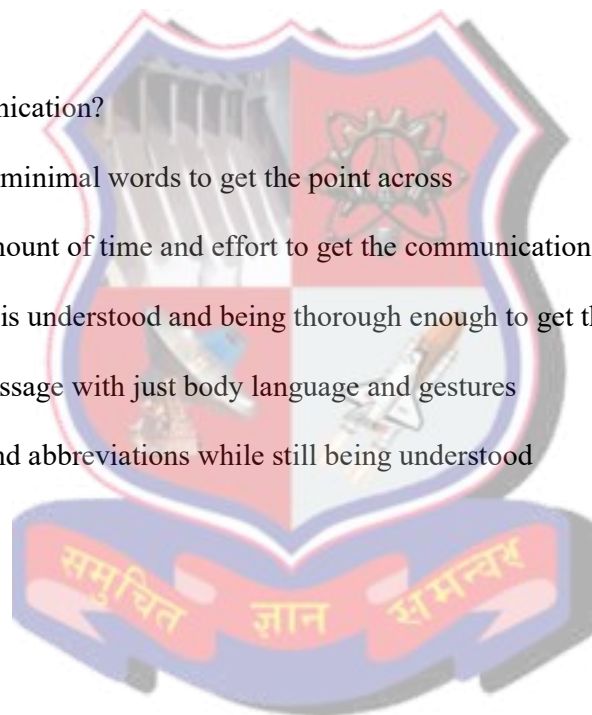
SECTION 2

GRAMMAR

Unit 1

PARTS OF SPEECH

The **part of speech** explains how a word is used in a sentence. The part of speech indicates how the word functions in meaning as well as grammatically within the sentence. An individual word can function as more than one part of speech when used in different circumstances. Understanding parts of speech is essential for determining the correct definition of a word when using the dictionary.

There are eight main parts of speech (also known as word classes): **nouns, pronouns, adjectives, verbs, adverbs, prepositions, conjunctions** and **interjection**

NOUN - (Naming word)

A noun is the name of a person, place, thing or idea.

Examples of nouns: Daniel, London, table, dog, teacher, pen, city, happiness, hope

Example sentences: **Steve** lives in **Sydney**. **Mary** uses **pen** and **paper** to write **letters**

Practice Exercise:

Apply suitable nouns.

1. …..is late today.

2. ….is very expensive these days.

3. He has a blue ….

4. They are very good friends. Their ….is example for many of us.

5. The …..addressed the gathering.

PRONOUN - (Replaces a Noun)

A pronoun is used in place of a noun or noun phrase to avoid repetition.

Examples of pronouns: I, you, we, they, he, she, it, me, us, them, him, her, this, those

Example sentences: Mary is tired. **She** wants to sleep. **I** want **her** to dance with **me**.

Practice Exercise:

Apply suitable pronouns.

1 .I know Mr. James. ….is a very good doctor.

2. Please look after my family members. ….have arrived here today only.

3. Dr. Ranjana was my professor. ….received many awards.

4. Have you seen ….book?

5. The peacock is a beautiful bird. ….feathers are colourful.

ADJECTIVE - (Describing word)

An **adjective** describes, modifies or gives more information about a noun or pronoun.

Examples: big, happy, green, young, fun, crazy, three

Example sentences: The **little** girl had a **pink** hat.

Practice Exercise:

Apply suitable adjectives.

1. I saw a …..truck on the road.

2. There are ….buildings in mega cities.

3. The garden has ……flowers.

4. My friend is wearing a ….shirt.

5. ….students get good marks.

VERB - (Action Word)

A **verb** shows an action or state of being. A verb shows what someone or something is doing.

Examples: go, speak, run, eat, play, live, walk, have, like, are, is

Example sentences: I **like** Woodward English. I **study** their charts and **play** their games.

Practice Exercise:

Apply suitable verbs.

1. Samarth …to college daily.

2. Children …in the garden.

3. We ….newspapers.

4. The manager ….the meeting.

5. I ….this temple everyday.
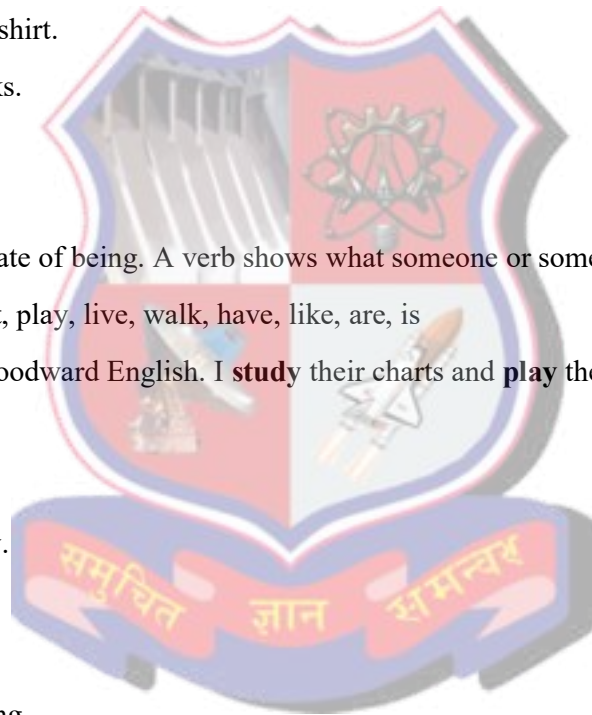
ADVERB - (Describes a verb)

An **adverb** describes/modifies a verb, an adjective or another adverb. It tells how, where, when, how often or to what extent. Many adverbs end in -LY

Examples: slowly, quietly, very, always, never, too, well, tomorrow, here

Example sentences: I am **usually** busy. **Yesterday**, I ate my lunch **quickly**.

Practice Exercise:

Apply suitable adverbs.

1. The boy ran …..

2. They sang the song …..

3. Rahul can play cricket …..

4. The teacher is teaching this topic …

5. We should listen to this news …..

PREPOSITION - (Shows relationship)

A **preposition** shows the relationship of a noun or pronoun to another word. They can indicate time, place, or relationship.

Examples: at, on, in, from, with, near, between, about, under

Example sentences: I left my keys **on** the table **for** you.

In, On, At, into , for, Since, between, among, to, towards

In:

 Use 1: When talking about time, we use 'in' when referring to an unspecific time of the day, a month, a season or a year.

- I always brush my teeth **in** the morning.
- My birthday is **in** June.
- It's always cold **in** winter.
- My brother was born **in** 1999.

Use 2: When talking about places, 'in' is used to indicate a location or place. Here are a few examples:

- "Mumbai is **in** India.
- I am **in** my room.

ON

Use 1: The word 'on', when talking about time, is for specific dates and days.

- He was born **on** September 24th.
- I go to the gym **on** Mondays and Wednesdays.

Use 2: When talking about places, 'on' is used when we are speaking about a surface. Something is on the surface of something else.

For example:

- The papers are **on** the coffee table.
- "I left the keys **on** the counter."

AT

Use 1: When talking about time, 'at' is used for a specific time.

- I will see you **at** 8:00 pm.
- My interview is **at** 3:00 pm.

Use 2: When talking about places, 'at' is used to indicate a specific place.

- We are meeting **at** the cafe.
- The football game is **at** the stadium.

INTO:

Used for showing movement: entering a place, building, or vehicle

- Hundreds of athletes marched into the stadium for the opening ceremony.
- She got into her car and drove away.

FOR:

It describes duration. It means "From the start of the period to the end of the period. so it is used for suggesting period of time.

- He has been living in Ahmedabad for several months .
- Usha has worked here for 10 years.

SINCE:

It defines a point in time in the past. It means "From a point in the past until now."

- He has been watching TV **since 7 pm**.
- Mohan had been writing a book **since 2010**

BETWEEN:

Between is usually used with **two** separate and distinct things.
For example:
- The treasure is between the palm tree and the hut.
- Our holiday house is between the mountains and the sea.

AMONG :

Among is used with separate and distinct things **more than two**. It is used to portray the idea of being in a group or in the midst of a group. For example:
- I want to live among like-minded people.
- Share these sweets among yourselves.
-

TO :

Use 1. It is used to indicate a destination or direction:
- .Does he want to come to the park with us?

Use 2. It is used to indicate time

- Her train arrives at quarter to five.

TOWARDS:

It means in the direction of somebody/something

- They were heading towards the garden.

Sample Exercise:

1. He lives --- Hyderabad.
2. He started --- six --- the morning.
3. . The child has been missing --- yesterday.
4. The mail train is due --- 3 P.M.
5. He travelled thirty kilometres --- two hours.
6. the flower pot was kept….the shelf …the room.
7.. --- last month I have seen him but once.
8. The four friends shared the food ….themselves.
9. I saw him running ….the market.
10. The boy jumped .. the river to save the child.

CONJUNCTION - (Joining word)

A conjunction joins two words, ideas, phrases or clauses together in a sentence and shows how they are connected.

Examples: and, or, but, because, so, yet, unless, since, if.

Example sentences: I was hot and exhausted but I still finished the marathon.

Connectors - ,

If, Unless, Otherwise, Because, Therefore, Who, Which, Where, When, Why.
If & Unless
It shows Condition.   if + present simple+ modal verb with future meaning
- If the weather improves, we'll go for a walk.
- Rama will go if Hari goes.
Unless means something similar to 'if … not'
- We'll go to the coast tomorrow unless it rains.
- Grievances cannot be redressed unless they are known.

Otherwise:
It is used to show what the result will be if the thing or condition, mentioned before, does not occur.
- Take your umbrella, **otherwise** you will get wet.

Because:
It connects the result of something with its reason.
- She spoke quietly because she didn't want her friend to hear.

Therefore:
 It indicates the cause or result of a situation.
- I studied for long hours, therefore I got very high marks from the final exams.

Who
 It is used to introduce a new part of a sentence about a **person** that was mentioned before.
- Mr. Mathur, who is a professor is known to me.

Which
It is used   to introduce a new part of a sentence about a **thing** that was mentioned before.
- The book which you bought yesterday is very useful.

Where

It is used to introduce a new part of a sentence about a **place** that was mentioned before.

- The place where players are staying is a five star resort.

When:

It is used to introduce a new part of a sentence about **time** that was mentioned before

- The time when you called me, I was in a meeting.

Why:

It is used to introduce a new part of a sentence about **reason** that was mentioned before

- The officer told us the reason why he was in urgency to leave.

Practice exercise:

Join the sentence groups using suitable connectors.

1. He passed the exam. He had a good teacher.
2. I do not eat meat. I do not eat eggs.
3. She is poor. She is honest.
4. I can not tell you the reason. I will not attend the function.
5. I felt ill. I went on working.
6. Rohit scored a century. India won the match.
7. The car was badly damaged in the accident. It needs repair.
8. We feel bored. We go to the movies to relieve our boredom.
9. Mohit must give in. He must also apologize. Jatin will not forgive him otherwise.
10. The children were playing hide-and-seek.. The rain came down suddenly.

INTERJECTION - (Expressive word)

An interjection is a word or phrase that expresses a strong feeling or emotion. It is a short exclamation.

Examples: Ouch! Wow! Great! Help! Oh! Hey! Hi!

- Wow! I passed my English test.

- Great!

- Ouch! That hurts
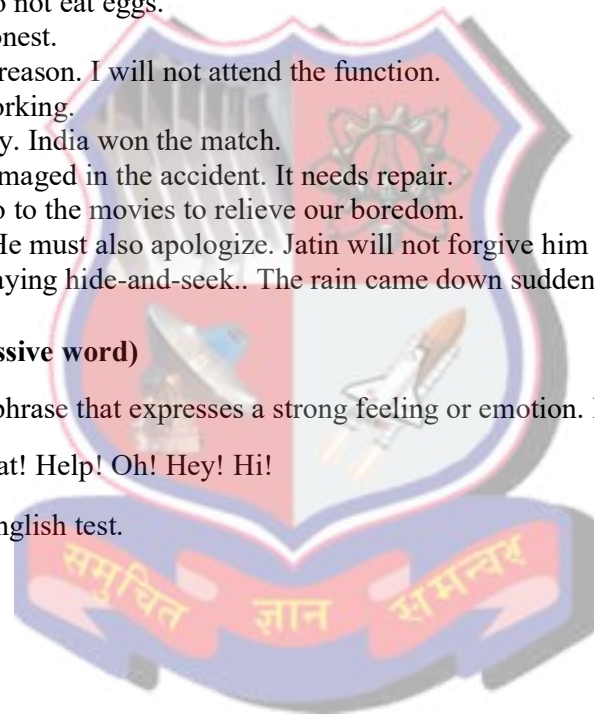
Summary chart

Parts Of Speech

NOUN

Name of a person, place, thing or idea.

Examples: Daniel, London, table, hope
- *Mary* uses a blue *pen* for her *notes*.

PRONOUN

A pronoun is used in place of a noun or noun phrase to avoid repetition.

Examples: I, you, it, we, us, them, those
- *I* want *her* to dance with *me*.

ADJECTIVE

Describes, modifies or gives more information about a noun or pronoun.

Examples: cold, happy, young, two, fun
- The *little* girl has a *pink* hat.

VERB

Shows an action or a state of being.

Examples: go, speak, eat, live, are, is
- I *listen* to the word and then *repeat* it.

ADVERB

Modifies a verb, an adjective or another adverb. It tells how (often), where, when.

Examples: slowly, very, always, well, too
- *Yesterday*, I ate my lunch *quickly*.

PREPOSITION

Shows the relationship of a noun or pronoun to another word.

Examples: at, on, in, from, with, about
- I left my keys *on* the table *for* you.

CONJUNCTION

Joins two words, ideas, phrases together and shows how they are connected.

Examples: and, or, but, because, yet, so
- I was hot *and* tired *but* still finished it.

INTERJECTION

A word or phrase that expresses a strong emotion. It is a short exclamation.

Examples: Ouch! Hey! Oh! Watch out!
- *Wow!* I passed my English exam.

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Practice Exercise:

To solve this exercise, you have to identify the noun, pronoun, verb, adverb, adjective, preposition, conjunction, interjection in the given sentences.

Tom went to market to buy books (_____).

He went to the market but (_____) did not buy new books.

I **liked** (_____) **him** (_____) better than he likes me.

A smart girl was dancing **quickly** (_____).

She (_____) eats apples in the morning daily.

When he was **sitting** (_____) on the grass, a snake bit him.

You (_____) caught him by his arm.

A **rich** (_____) lady bought a **beautiful** (_____) necklace.

Hurrah! (_____) I have passed the examination.

The cat is sitting **under** (_____) the chair.

Alas! (_____) I could not receive you.

The body of the cage is made of **iron**. (_____)

It is not **your** (_____) pen; it is hers.

There is still some milk **in** (_____) the jug.

Jimmy is **performing** (_____) his duties diligently.

The drawing made by you is **almost** (_____) perfect.

I shall not go **unless** (_____) you allow.

The road is **to** (_____) go by.

The flowers smell **sweet**. (_____)

He **frequently** (_____) goes to the beach.

UNIT 2. TENSES

In grammar, tense is a category that expresses time reference with reference to the moment of speaking. Tenses are usually manifested by the use of specific forms of verbs, particularly in their conjugation patterns. It is very essential to have knowledge of tenses for correct use of a language to establish effective communication.

There are three types of Tenses- **Present, Past and Future.**

Example:

- o We watch movies every weekend. - Present Tense
- o He wrote an application for that job yesterday. - Past Tense
- o You will complete the project by next month. – Future Tense

Present Tense – The verb in present tense refers to the present time.

Past Tense- The verb in past tense refers to the past time.

Future Tense- The verb in future tense refers to the future time.

The tense of a verb shows not only time of action but also the state of action referred to. Each of these Tenses has four sub tenses-

1) **Simple,**
2) **Continuous,**
3) **Perfect and**
4) **Perfect Continuous Tense.**

Simple or Indefinite Tense:

Here the verb specifies the simple action, without anything being said about the completeness or incompleteness of the action.

Sub Tense	Person	Singular	Plural
Present	First person	I speak	We speak
	Second person	You speak	You speak
	Third person	He / She / It speaks	They speak
Past	First person	I Spoke	We spoke
	Second person	You spoke	You spoke
	Third person	He / She / It spoke	They spoke
Future	First person	I shall speak	We shall speak
	Second person	You will speak	You will speak
	Third person	He / She / It will speak	They will speak

Continuous/Progressive Tense:

Here the verb indicates incomplete or continuous action.

Sub Tense	Person	Singular	Plural
Present	First person	I am speaking	We are speaking
	Second person	You are speaking	You are speaking
	Third person	He / She / It is speaking	They are speaking
Past	First person	I was speaking	We were speaking

	Second person	You were speaking	You were speaking
	Third person	He / She / It was speaking	They were speaking

Perfect Tense:

Here the verb shows that the action is completed or perfect.

Sub Tense	Person	Singular	Plural
Present	First person	I have spoken	We have spoken
	Second person	You have spoken	You have spoken
	Third person	He/she/it has spoken	They have spoken
Past	First person	I had spoken	We had spoken
	Second person	You had spoken	You had spoken
	Third person	He/ she/ it had spoken	They had spoken

Perfect Continuous Tense:

Here the verb shows that the action started in past and still it is in progress.

Sub Tense	Person	Singular	Plural
Present	First person	I have been watching	We have been watching
	Second person	You have been watching	You have been watching
	Third person	He/she/it has been watching	They have been watching

USES OF TENSES :-

Present Tense [Simple Present Tense]

It is used:

i.   To express a habitual action or an action happens regularly.
        Examples:
   o The manager gets up at five and starts work at seven
   o Umesh practices the piano every day.
ii.   For universal or general truth.
         Examples:
   o The earth turns 360º every day.
   o Antarctica is covered with ice.
iii.   In narrative such as sports events or demonstrations (substitute for the simple past). Examples:
   o   Virat catches the ball and he throws it to the wicket.
   o   First I put some butter in the pan and turn on the cooker.

iv.   To express a future event that is part of a fixed timetable.
        Examples:
   o The train leaves at 03.00 pm sharp.
   o The flight is at 07.00 tomorrow morning.

v.   To state the facts and things in general that is always true.
        Examples:
  o India is a rich source of herbs.
  o Gold isn't liquid at room temperature.
vi.   In exclamatory sentences beginning with 'here' and 'there'.
        Examples:
  o There goes your trainer!
  o Here comes the train you are waiting for!
vii.   To introduce quotations.
        Example:
  o Swami Vivekananda says, "Arise, awake and do not stop until the goal is reached".
viii.   Instead of the simple Future Tense in clauses of time and condition
        Examples:
  o I shall wait till you finish your lunch.
  o If you heat water to 100 degrees, it boils.

Present Tense [Present Continuous Tense]

It is used:

i.   To indicate an action that is happening at the moment of speaking.
        Examples:
  o I am just leaving office. I'll be home in an hour.
  o Please be quiet. The children are sleeping.
ii.   To indicate an action which may not happening at the time of speaking.
        Examples:
  o Aren't you teaching at the university now?
  o At two in the afternoon, we are eating lunch.
iii.   For definite future arrangements.
        Examples:
  o We are going to the beach at the weekend.
  o I am not going to the party tonight.
iv.   For habits that are not regular, but that happen very often. (an adverb like 'always', 'continuously' or
        'constantly' are used)
        Example:
  o You are continuously losing your keys.
  o She is constantly missing the train.
  o Adhiraj is always smiling.
v.   Verbs which refers to state rather than actions or progress, are not normally used in the continuous
        form in the present tense:
  a)   Perceptions: feel, smell, hear, taste, see
  b)   Emotions: want, wish, envy, fear, dislike, hate, hope, like, love regret, hope, refuse.
  c)   Thinking: think, suppose, believe, agree, consider, trust, remember, forget, know, understand,
       imagine
  d)   Appearing: appear, look, seem.

Present Tense [Present Perfect Tense]

It is used:

i.   To indicate an action completed in the recent or immediate past (with just). Examples:
- o I have just finished my work.
- o He has just taken the medicine.

ii.   To indicate a past action happened at an unspecified time.
        Examples:
- o I have been to France three times.
- o Madhuri has never travelled by train.
- o Manisha has studied two foreign languages.

iii.   To show that something started in the past and has continued up until now. Examples:
- o Rashmi has been in England for six months.
- o Priya has loved chocolate since she was a little girl.

The adverb and adverbial phrases with unfinished time expressions can be used in Present Perfect such as: ever, never, once, many times, several times, before, so far, this month, this year, this week, today, already, yet, etc but not with specific past /finished time expressions such as: yesterday, one year ago, last week, when I was a child, when I lived in Japan, at that moment, that day, one day, etc.

Perfect Continuous Tense (Present Perfect Continuous Tense)

It is used

i. To express actions which started in the past and continue to the present. We often use this with 'for' and 'since'

- o I've been living in London for two years.
- o She's been working here since 2004.
- o We've been waiting for the bus for hours.

ii. To express actions which have recently stopped and have a result, which we can often see, hear, or feel, in the present. We don't use a time word here. The action is over but the effect can be seen.

- o I'm so tired, I've been studying.
- o I've been running, so I'm really hot.
- o It's been raining so the pavement is wet.

Past Tense [Simple Past Tense]

It is used:
i.   To express the idea that an action started and finished at a specific time in the past. Examples:
- o I didn't see a play yesterday.
- o Did you have dinner last night?

ii.   Sometime the specific time may not be mentioned. It can be implied by context. Example:
- o I didn't sleep well (last night).

iii.   To describe a past habit
        Examples:
- o They never went to school, they always skipped class.
- o Did you play a musical instrument when you were a kid?

Past Tense [Past Continuous Tense]-

It is used:

i.   For an action going on at some time in the past.
Examples:
- Kavya was enjoying the games at funfair
- Stuti was preparing for IIT entrance exam.

ii.   The past continuous and simple past are used together when a new action happened in the middle of longer action. Simple past used for later action.
Examples:
- While I was writing the email, the computer suddenly went off.
- What were you doing when I called you?

iii.   It is also with 'Always', 'continuously' 'continually' or 'constantly' for persistent habit in the past.
Examples:
- She was always coming to class late
- I didn't like them because they were continuously complaining.

Past Tense [Past Perfect Tense]-

It is used:
i.   To indicate a completed action before a certain point of time in the past.
Examples:
- When we arrived, the film had started.
- I had never seen such a beautiful beach before I went to Miami.

ii.   To express the idea that something occurred before another action in the past. Examples:
- When I reached home, my mother had left for the office.
- I had written the letter before he arrived.

Future Tense [Simple Future Tense]-

It is used:

i.   To talk about facts in the future time which we cannot control.
Examples:
- My uncle will turn forty this Sunday
- It will rain this week.

ii.   To indicate an action that we think, expect, hope or believe will happen in the future. Examples:
- I think Brazil will win the World Cup.
- I'm sure you will enjoy the games.
- Probably, it will rain today.

iii.   To indicate an action that we decide to do at the time of speaking
Examples:
- The task is not completed; I will complete it by evening.
- It is raining. I will take an umbrella.

Sample Exercises:

Rewrite the following sentences using correct form of verbs given in bracket.

1)   When you arrive tonight, we……….. (go) out for dinner.

2) Whenever we meet, we ……….. (plan) a trip.

3) The sun ……….. (shine) brightly.

4) Vijay ……….. (wait) for me when I arrived.

5) I promise I ……….. (not/tell) him about the surprise party.

6) Shikhar Dhawan ……….. (score) a century in the last match.

7) I ……….. (get) hungry. Let's go and have something to eat.

8) . …….. (have) you ever ……….. (visit) the U.S. before your trip in 2006?

9) Who ……….. (invent) the bicycle?

10) Yesterday evening the phone ……….. (ring) three times while we ……….. (have) dinner.

11) When I met you last time, you ……….. (think) of moving to a new flat.

12) She only understood the movie because she ……….. (read) the book.

13) Can you ……….. (help) me move this heavy table?

14) Hello Nitya, I ……….. (not/see) you for ages. How are you?

15) We can go out now. It ……….. (not/rain) any more.

16) He ……….. (go) to that place every year.

17) There I……….. (notice) how important it……….. (be) to speak English nowadays.

18) And I……….. (already begin /) to read the novel.

19) If I ……….. (pass) my exams successfully, I……….. (start) an apprenticeship in September.

20) While I ……….. (do) the language course, I ……….. (meet) lots of young people from all over the world.
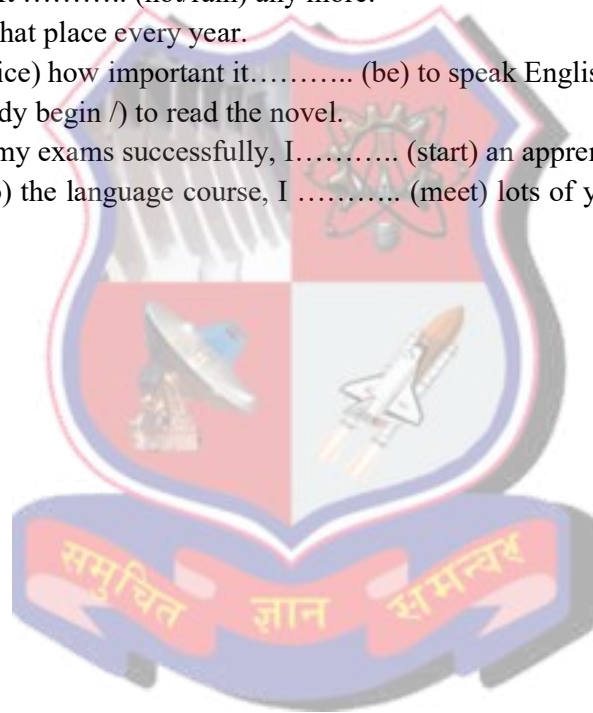
UNIT 3. MODAL AUXILIARIES

An Auxiliary verb is a verb which helps or supports the main verb to form its tense, voice or mood. They are basically helping verbs and there are two types of Auxiliaries:

Primary & Modal.

[1] Primary Auxiliaries

a) Be (am, is, are ,was, were)
- I am a doctor.
- He was given a prize by the principal.
- They are doing their work.
- They were working here last year.

b) have (has, had) [Possession]
- We have a flat in Ahmedabad.
- Dr Tanna has a car.
- She had no money.

c) do (does, did) (Questions & Negative)
- What do you want from me? I don't have enough money.
- Does he go school on time?
- Did he complete his work?

[2] Modal Auxiliaries are used to express various moods and attitudes like permission, ability, duty, advice, suggestion, possibility …

SHALL

- He shall leave for Ahmedabad tomorrow. (Future)

- You shall be punished if you are late again. (Threat)

- You shall go out of the class. (Command)

- She shall have a prize. (Promise)

- Shall we have a cup of coffee?(Suggestion/ Proposal)

- Shall I carry your luggage? (to offer service)

SHOULD

- We should obey our elders. (Duty)

- We should keep promises.(Obligation)

- She should be in laboratory now. (Probability)

WILL

- He will come tomorrow. (Future)
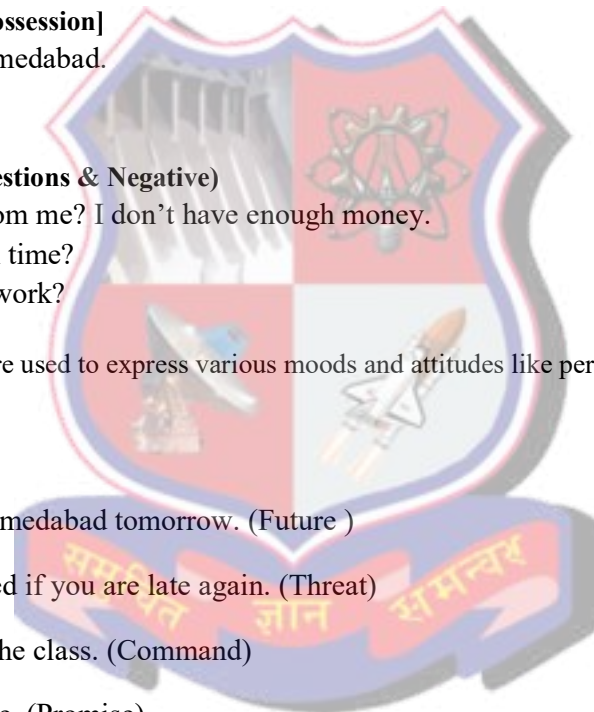
- o Will you lend me a pen, please? (Polite Request)

- o I will speak to your customer care. (Threat)

- o You will not go without my permission. (Command)

- o I will teach you English (Promise)

- o I will meet my target. (Determination)

- o I will come to see you tomorrow. (Willingness)

WOULD

- o Would you lend me your scooter, please? (Politeness)

- o I wish you would get good marks.(Desire)

- o I would like to have some coffee (likes/dislikes)

- o I would rather stay at home than watching movie. (preference)

CAN

- o She can speak English fluently. (Ability)

- o We can walk 5 kms a day. (Capacity)

- o Ramesh can come tomorrow. (Permission)

- o She can be at home. (Possibility)

COULD

- o I could run fast, when I was young. (Ability in Past)

- o Could you help me in my assignment?   (Request / Politeness)

MAY

- o The guest may come. (Possibility)

- o May I Come in Sir ? (Permission)

- o It may rain today. (Uncertainty)

- o May God bless you! (Wishes/Blessings)

MIGHT

- o He might not come (Rare Possibility)

- o Mayank has not come to school today. He might have missed the bus. (Possibility of Past)

MUST

o I must get the first prize. (Determination)

o He must have attended the meeting. (Certainty)

o You must pass mid semester exam. (Compulsion.)

o You must do your homework regularly. (Necessity)

o You must not speak loudly in the hospital. (Prohibition.)

Note:- have to/has to also suggests compulsion and necessity. Had to is used to show feeling of compulsion in past.

o I have to submit an assignment tomorrow.

o I had to submit the assignment yesterday though I was not much satisfied with my work.

NEED

o You need to go to a doctor.(Necessity)

o You need not study as the examination is over (absence of Necessity)

OUGHT TO

o We ought to love our neighbours. (Duty / Obligation / Desire)

Sample Exercise:

[1] Fill in the blanks with appropriate modal auxiliary:

1. On Saturdays, we …….go to school in informal dress.
2. Varun …… go for a vacation this summer.
3. When I was young, I …… swim across Ganga.
4. You ………not raise your voice.
5. I ……. to work hard to improve my performance.

[2] Fill in the blanks with appropriate modal auxiliary:

1) ……..we play football? (Permission)
2) The astrologer ….. leave the village as he lied to people. (compulsion)
3) The Indian Eleven ……. be disheartened. (Absence of Necessity)
4) …………we go to their help? (suggestion)
5) She ……come tomorrow.(Possibility)
6) ……have your book? (Permission)
7) Tomorrow ….. be a holiday. (Future)
8) Do not put off till tomorrow what you …. do today. (Ability)
9) He ….not tell a lie before me. (Desirability)
10) You …..come whenever you like. (Permission)
11) ……..god help you. (Blessing)
12) We ……honour our parents . (Moral obligation)
13) ……. You please let me have your book? (Polite request)
14) You …. Carry out government orders. (Compulsion)

15) He tried hard but … not lift it. (Past ability)

16) People …….. to vacate the village, as the flood has crossed the danger mark. (Necessity)

17) I ……borrow from this library very soon. (Ability)

18) We ……help the needy. (Desirability)

19) …….I carry your luggage? (Permission)

20) You …..not go until you finish this assignment. (Prohibition)

21) She ….. climb the hill when she was in college. (past ability)

22) ……..you teach my brother phonetics, please? (polite request)

23) I …….. read French. (ability)

24) They …..not enter the kitchen with shoes. (prohibition)

25) …….we have a cup of tea?(suggestion)

26) You ….. write assignment in this book. (permission)

27) We …… to take our umbrella as it is raining. (necessity)

28) We ….. take bath in the morning daily. (desirability)

29) Your wrist watch is almost new. You ……. Buy another one. (absence of necessity)

30) You ….. smoke at a petrol pump. It is highly inflammable. (negative obligation)

31) ……. You sweep my drawing room? (polite request)

32) No one …….. carry explosives in the train. (negative prohibition)
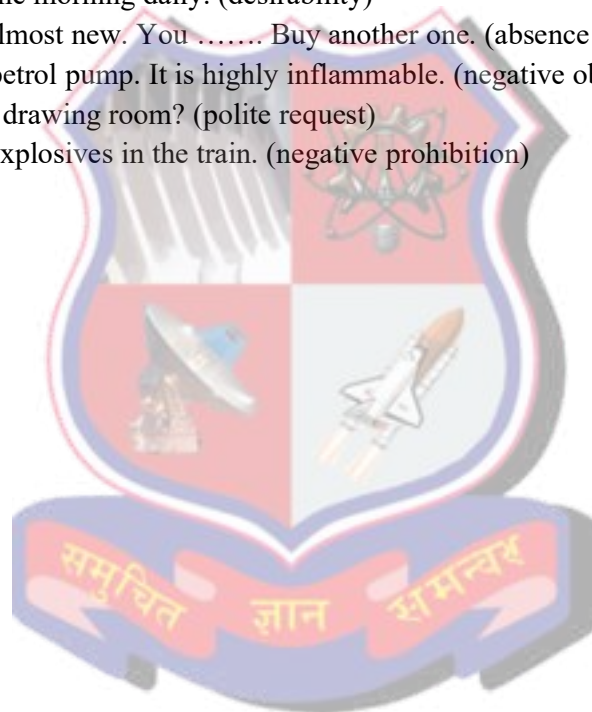
UNIT 4. SUBJECT VERB AGREEMENT

Subject – Verb Agreement means the harmony between the subject of the sentence and the verb. The verb always follows the subject of the sentence.

1. A finite verb must agree its subject in person and number.

Examples:

o I <u>am</u> reading a book.
o He <u>is</u> playing.
o The child is playing.
o The children are watching cartoons.

2. The Error of Proximity:

In cases where subject and verb are separated by a long phrase or a clause, the verb agrees with the real subject and not the noun or pronoun placed next to it.

Examples:

o The apples in the basket are fresh.
o The strong bond of affection between the two cousins was obvious.
o The joys one experiences in one's childhood are beyond description.

3. The Introductory '*There*':

In a sentence beginning with *there*, the verb agrees with the real subject that follows *there.*

Examples:

o There is no proof of his involvement in this case.
o There are major flaws in your argument.

4. Two or More Nouns or Pronouns joined by 'And'

(a) Subject consists of two or more nouns or pronouns joined by and- PLURAL Verb.

Examples:

o He and I were given the responsibility of the stage.
o Hard work and sincere efforts are the key to success.
(b) The nouns refer to the same person or thing –SINGULAR Verb

Examples:

o The director and producer of the movie was present there.
o Rice and curry is his favorite dish.
(c) The nouns convey the same meaning, placed together only for emphasis-Singular verb

Examples:

o The honour and the glory of my country is uppermost in my mind.
o The power and influence Gandhiji exerted over the Indian masses was really great.

5. Subject consists of two nouns or pronouns joined with as well as, together with, along with, in addition to: verb agrees with the first subject

Examples:

o Mr. Das as well as his friends has escaped unhurt.
o You as well as I are responsible for our losses.
o The captain with othe team members was given a hearty welcome.

6.Two subjects joined with not only, but also: Verb agrees with the latter subject

Example:

o Not only the principal but also the teachers have played an important role.

7. Two subjects joined with…or, neither…has .nor verb agreed with the latter subject.

Examples:

o Either you or Gaurav is responsible for the mistake.
o Neither Gaurav nor you are responsible for the mistake.

8. One subject singular and the other plural

The pattern is: **Either /Neither+ Singular sub +or/nor + Plural sub. Plural verb**

Examples:

o Either he or his parents are going to attend the marriage.
o Neither the moon nor the stars are shining today.

9. **Either, Neither, Each, Everyone, One of the -Singular Verb**

Examples:

o She does not care what either of her parents says.
o Neither of these two students has done well.
o Each of the students has to submit the assignment.
o Everyone in the family has been questioned.
o One of the books is going to win the Booker Prize.

10. None refers to amount or quality - Singular Verb

Example:

o None of the work was done.
  ➤ **None followed by plural noun or pronoun: Verb usually plural but can be singular**
   Examples:

o None of the stories are interesting.
o None of his stories has appealed the audience.

11. Much, More, Little, Less - Singular Verb

Examples:

o Much of my anxiety is over.
o More than half of the time is over.
o Little has been achieved so far.
o Less of my time is now wasted on attending to phone calls.

12. A lot of, a great deal of, plenty of, most of, some of, refer to amount or quantity

Singular Verb Examples:

o A lot of time was wasted on preliminary enquiries.
o Plenty of help was available.
o Lots of food was distributed to the poor.

> **A lot of, a great deal of, plenty of, most of, some of refer to number.**

Plural Verb Examples:

o Lots of people are taking part in the marathon.
o Plenty of shops accept payments by a credit card.

Sample Exercise:

[1] Fill in the blanks:-

1. The sound of bells ……..(was, were) heard all over the neighborhood.
2. Sincere effort not more advice …. (is, are) the need of the hour.
3. Some of the work (remain, remains) to be done.
4. Either the captain or the bowler …. (is, are) at fault.
5. The teacher along with the students (have, has) gone on picnic.
6. Neither of the candidates (was, were) suitable.
7. The teacher as well as the students (was, were) present on the ground.
8. She, not you (have, has) given the right answer.

[2] Pick the right verb:-

1. His use of clauses and connectors (is/are) appalling.
2. One of the students in my class (own/owns) a motorcycle.
3. There (was/were) several; people in the adjoining room.
4. The deputy along with thirty miners (were/was) killed.
5. The pump including the motor and the hose (cost/costs) Rs. 10,000/-.
6. Either the sand or the cement (is/are) bad.
7. The chief engineer accompanied by two executive engineers (is/are) coming today.
8. Each of the boxes (weigh/weighs) 10 kgs.
9. None if the gas (has/have) been consumed.
10. Either Ram or his brother (work/works) as a manager here.
11. None of them (attends/attend) to their work these days.
12. Some of the work (remain/remains) unfinished.
13. Some of the pipes (run/runs) for several miles.
14. All the oil (has/have) been stolen.
15. All the laborers (is/are) tribals.
16. Apple pie and custard (is/are) my favourite dish.
17. Some people (dislikes, dislike) travelling by sea, as it (make, makes) them sea-sick.
18. The Thirty-Nine steps (was, were) written by John Buchan.
19. The secretary and the member (has, have) come to visit the institute today.
20. The trouble with these guys (is,are) their rustic approach.

21. A lot of good we take (is/are) wasted.
22. A large amount of money he invested (was/were) lost.
23. Some more milk (is/are) needed.
24. None of these dishes (is/are) to my taste.
25. Only a few students (is/are) likely to fail.
26. A little dust (is/are) visible.
27. A lot of money (has/have) been spent on buildings.
28. None of the children (is/are) intelligent.
29. The president and the secretary (were/was) arrested.

UNIT 5 Basic Sentence Patterns of English

Sentence: A sentence is a textual unit consisting of one or more words that are grammatically linked.

Here we will study basic four patterns of English. For better understanding of the same, We need to understand the following terms.

Subject: A *subject* is a part of a sentence that contains the person or thing performing the action (or *verb*) in a sentence. Traditionally the subject is the word or phrase which controls the verb in the clause.

- **The peon** rings the bell.

Verb: Verbs are words that express action or state of being. You have studied about them in parts of speech and tenses. They are action words in the sentence.

- He **runs** fast.

Object: An object is a noun, a noun phrase, or a pronoun that is affected by the action of a verb.

- Ram is reading **a newspaper**.

Adverbial: Adverbials are words that we use to give more information about a verb. They can be one word (angrily, here) or phrases (at home, in a few hours) and often say how, where, when or how often something happens or is done, though they can also have other uses..

- He speaks **fluently.**
- Lata ate breakfast **yesterday morning**.

Complement: Complement is the term used for a word or words that are needed to complete the meaning of an expression.
- Algebra is difficult.

    The following are basic four patterns to make a meaningful sentence.

 1. **S + V : Subject + Verb**
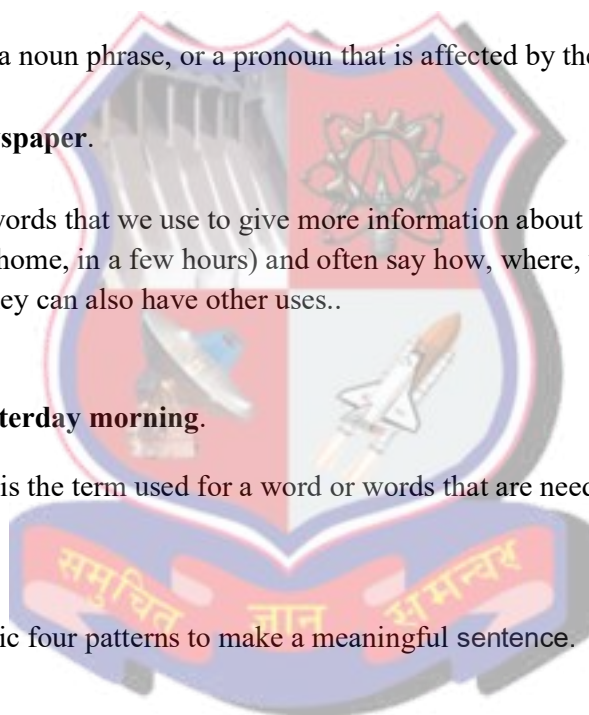
- He/ laughed.
- Dogs/ bark.
- We /enjoyed.

2. S+V+O: Subject + Verb+ Object
- We / received / the parcel.
- Many students / witnessed / the play.
- The police / arrested / the thief

3. S+V+A: Subject + Verb+ Adverbial
- The train / arrived / late
- It / rained / last night
- He / reads / slowly

4. S+V+C: Subject + Verb+ Complement

- They / are / players.
- I / am / an Indian.
- Her father / is / a doctor

Practice exercise

1. Identify the sentence pattern of given sentences.

1. They / worked / hard

2. It / was / a very pleasant talk

3. The winner was rewarded.

4. She / sings / a song

5. They / came / suddenly.

6. The class / became / noisy

7. People/ cried.

8. Her father / is / a doctor

9. I /refuse.

10. You/ are/ intelligent.

2. Form ten sentences of each sentence pattern.

SECTION 3

PROSE AND POETRY

Unit 1
The Leopard

Ruskin Bond

I first saw the leopard when I was crossing the small stream at the bottom of the hill.

The ravine was so deep that for most of the day it remained in shadow. This encouraged many birds and animals to emerge from cover during daylight hours.Few people ever passed that way: only milkmen and charcoal-burners from the surrounding villages.

As a result, the ravine had become a little haven of wildlife, one of the few natural sanctuaries left near Mussoorie, a hill- station in northern India.

Below my cottage was a forest of oak and maple and Himalayan rhododendron. A narrow path twisted its way down through the trees, over an open ridge where red sorrel grew wild, and then steeply down through a tangle of wild raspberries, creeping vines and slender bamboo.

At the bottom of the hill the path led on to a grassy verge, surrounded by wild dog roses. (It is surprising how closely the flora of the lower Himalayas, between 5,000 to 8,000 feet, resembles that of the English countryside.)

The stream ran close by the verge, tumbling over smooth pebbles, over rocks worn yellow with age, on its way to the plains and to the little Song River and finally to the sacred Ganges.

When I first discovered the stream it was early April and the wild roses were flowering—small white blossoms lying in clusters.

I walked down to the stream almost every day, after two or three hours of writing.

I had lived in cities too long, and had returned to the hills to renew myself, both physically and mentally. Once you have lived with mountains for any length of time, you belong to them, and must return again and again.

Nearly every morning, and sometimes during the day, I heard the cry of the barking deer. And in the evening, walking through the forest, I disturbed parties of pheasant. The birds went gliding down the ravine on open, motionless wings. I saw pine martens and a handsome red fox, and I recognized the footprints of a bear.

As I had not come to take anything from the forest, the birds and animals soon grew accustomed to my presence; or possibly they recognized my footsteps. After some time, my approach did not disturb them.

The langurs in the oak and rhododendron trees, who would at first go leaping through the branches at my approach, now watched me with some curiosity as they munched the tender green shoots of the oak. The young ones scuffled and wrestled like boys, while their parents groomed each other's coats, stretching themselves out on the sunlit hillside. But one evening, as I passed, I heard them chattering in the trees, and I knew I was not the cause of their excitement.

As I crossed the stream and began climbing the hill, the grunting and chattering increased, as though the langurs were trying to warn me of some hidden danger. A shower of pebbles came rattling down the steep hillside, and I looked up to see a sinewy, orange-gold leopard poised on a rock about twenty feet above me.

It was not looking towards me, but had its head thrust attentively forward, in the direction of the ravine. Yet it must have sensed my presence, because it slowly turned its head and looked down at me.

It seemed a little puzzled at my presence there; and when, to give myself courage, I clapped my hands

sharply, the leopard sprang away into the thickets, making absolutely no sound as it melted into the shadows.

I had disturbed the animal in its quest for food. But a little after I heard the quickening cry of a barking deer as it fled through the forest. The hunt was still on.

The leopard, like other members of the cat family, is nearing extinction in India, and I was surprised to find one so close to Mussoorie. Probably the deforestation that had been taking place in the surrounding hills had driven the deer into this green valley; and the leopard, naturally, had followed.

It was some weeks before I saw the leopard again, although I was often made aware of its presence. A dry, rasping cough sometimes gave it away. At times I felt almost certain that I was being followed.

Once, when I was late getting home, and the brief twilight gave way to a dark, moonless night, I was startled by a family of porcupines running about in a clearing. I looked around nervously, and saw two bright eyes staring at me from a thicket. I stood still, my heart banging away against my ribs. Then the eyes danced away, and I realized that they were only fireflies.

In May and June, when the hills were brown and dry, it was always cool and green near the stream, where ferns and maidenhair and long grasses continued to thrive.

Downstream I found a small pool where I could bathe, and a cave with water dripping from the roof, the water spangled gold and silver in the shafts of sunlight that pushed through the slits in the cave roof.

'He maketh me to lie down in green pastures: he leadeth me beside the still waters.' Perhaps David had discovered a similar paradise when he wrote those words; perhaps I, too, would write good words. The hill-station's summer visitors had not discovered this haven of wild and green things. I was beginning to feel that the place belonged to me, that dominion was mine.

The stream had at least one other regular visitor, a spotted forktail, and though it did not fly away at my approach it became restless if I stayed too long, and then it would move from boulder to boulder uttering a long complaining cry.

I spent an afternoon trying to discover the bird's nest, which I was certain contained young ones, because I had seen the forktail carrying grubs in her bill. The problem was that when the bird flew upstream I had difficulty in following her rapidly enough as the rocks were sharp and slippery.

Eventually I decorated myself with bracken fronds and, after slowly making my way upstream, hid myself in the hollow stump of a tree at a spot where the forktail often disappeared. I had no intention of robbing the bird: I was simply curious to see its home.

By crouching down, I was able to command a view of a small stretch of the stream and the sides of the ravine; but I had done little to deceive the forktail, who continued to object strongly to my presence so near her home.

I summoned up my reserves of patience and sat perfectly still for about ten minutes. The forktail quietened down. Out of sight, out of mind. But where had she gone? Probably into the walls of the ravine where I felt sure, she was guarding her nest.

I decided to take her by surprise, and stood up suddenly, in time to see not the forktail on her doorstep, but the leopard bounding away with a grunt of surprise! Two urgent springs, and it had crossed the stream and plunged into the forest.

I was as astonished as the leopard, and forgot all about the forktail and her nest. Had the leopard been following me again? I decided against this possibility. Only man-eaters follow humans, and, as far as I knew, there had never been a man-eater in the vicinity of Mussoorie.

During the monsoon the stream became a rushing torrent, bushes and small trees were swept away, and the friendly murmur of the water became a threatening boom. I did not visit the place too often, as there were leeches in the long grass.

One day I found the remains of a barking deer which had only been partly eaten. I wondered why the

leopard had not hidden the rest of his meal, and decided that it must have been disturbed while eating.

Then, climbing the hill, I met a party of hunters resting beneath the oaks. They asked me if I had seen a leopard. I said I had not. They said they knew there was a leopard in the forest.

Leopard skins, they told me, were selling in Delhi at over 1,000 rupees each. Of course there was a ban on the export of skins, but they gave me to understand that there were ways and means. . . . I thanked them for their information and walked on, feeling uneasy and disturbed.

The hunters had seen the carcass of the deer, and they had seen the leopard's pug-marks, and they kept coming to the forest. Almost every evening I heard their guns banging away; for they were ready to fire at almost anything.

'There's a leopard about,' they always told me. 'You should carry a gun.' 'I don't have one,' I said.

There were fewer birds to be seen, and even the langurs had moved on. The red fox did not show itself; and the pine martens, who had become quite bold, now dashed into hiding, at my approach. The smell of one human is like the smell of anyother.

And then the rains were over and it was October; I could lie in the sun, on sweet- smelling grass, and gaze up through a pattern of oak leaves into a blinding blue heaven. And I would praise God for leaves and grass and the smell of things, the smell of mint and bruised clover, and the touch of things—the touch of grass and airand sky, the touch of the sky's blueness.

I thought no more of the men. My attitude towards them was similar to that of the denizens of the forest. These were men, unpredictable, and to be avoided if possible.

On the other side of the ravine rose Pari Tibba, Hill of the Fairies: a bleak, scrub-covered hill where no one lived.

It was said that in the previous century Englishmen had tried building their houseson the hill, but the area had always attracted lightning, due to either the hill's location or due to its mineral deposits; after several houses had been struck by lightning, the settlers had moved on to the next hill, where the town now stands.

To the hillmen it is Pari Tibba, haunted by the spirits of a pair of ill-fated loverswho perished there in a storm; to others it is known as Burnt Hill, because of its scarred and stunted trees.

One day, after crossing the stream, I climbed Pari Tibba—a stiff undertaking, because there was no path to the top and I had to scramble up a precipitous rock-facewith the help of rocks and roots that were apt to come loose in my groping hand.

But at the top was a plateau with a few pine trees, their upper branches catching the wind and humming softly. There I found the ruins of what must have been the houses of the first settlers—just a few piles of rubble, now overgrown with weeds,sorrel, dandelions and nettles.

As I walked through the roofless ruins, I was struck by the silence that surroundedme, the absence of birds and animals, the sense of complete desolation.

The silence was so absolute that it seemed to be ringing in my ears. But there wassomething else of which I was becoming increasingly aware: the strong feline odour of one of the cat family.

I paused and looked about. I was alone. There was no movement of dry leaf or loose stone. The ruins were for the most part open to the sky. Their rotting rafters had collapsed, jamming together to form a low passage like the entrance to a mine;and this dark cavern seemed to lead down into the ground.

The smell was stronger when I approached this spot, so I stopped again and waited there, wondering if I had discovered the lair of the leopard, wondering if theanimal was now at rest after a night's hunt.

Perhaps he was crouching there in the dark, watching me, recognizing me,knowing me as the man who walked alone in the forest without a weapon.

I like to think that he was there, that he knew me, and that he acknowledged my visit in the

friendliest way: by ignoring me altogether.

Perhaps I had made him confident—too confident, too careless, too trusting of thehuman in his midst. I did not venture any further; I was not out of my mind. I did not seek physical contact, or even another glimpse of that beautiful sinewy body, springing from rock to rock. It was his trust I wanted, and I think he gave it to me.

But did the leopard, trusting one man, make the mistake of bestowing his trust on others? Did I, by casting out all fear—my own fear, and the leopard's protective fear —leave him defenseless?

Because next day, coming up the path from the stream, shouting and beating drums, were the hunters. They had a long bamboo pole across their shoulders; and slung from the pole, feet up, head down, was the lifeless body of the leopard, shot in the neck and in the head.

'We told you there was a leopard!' they shouted, in great good humour. 'Isn't he afine specimen?'

'Yes,' I said. 'He was a beautiful leopard.'

I walked home through the silent forest. It was very silent, almost as though thebirds and animals knew that their trust had been violated.

I remembered the lines of a poem by D. H. Lawrence; and, as I climbed the steepand lonely path to my home, the words beat out their rhythm in my mind: 'There was room in the world for a mountain lion and me.'

Glossary:

Ravine: Narrow Valley

Sanctuary: Shelter

Curiosity: Interest

Extinction: Loss

Pasture: Grazing Land

Precipitous: Steep

Denizens: A person, animal, or plant that lives or is found in a particular place

Glimpse: Sight

Ex: 1. Choose the correct option:

1. The author first saw the leopard when …
   (a) he was climbing the hill   (b) it was caught by hunters   (c) he was crossing the stream   (d) he was going after forktail
2. When the author discovered the stream, it was month of …
   (a) May   (b) June   (c) February   (d) April
3. The … was a regular visitor of the stream.
   (a)   Forktail   (b) Tiger   (c) lion (d) sparrow
4   Leopared skins are sold in ….
   (a)   Delhi   (b) Kolkatta   (c) Lucknow (d) Mumbai
5 . ….. is called *Hill of Fairies*
   (a) Pari Hill   (b) Angel Tibba   (c) God Hill   (d) Pari Tibba

Ex: 2. Answer the following questions:

1. Describe the valley where the leopard lived.
2. Why did the author return to mountains?
3. Why didn't his approach disturb the birds and animals?
4. What happened when the leopard sensed the author's presence?
5. What did the author do to find forktails's home?
6. What was the hunters' advice to the author?
7. What was the author's attitude towards men?

Suggested Speaking Skills Topics (For 30 Marks of PA in LAB)

1. Beauty of Nature
2. Cruelty towards Animals
3. Environment Conservation

UNIT 2 After Twenty Years

O'Henry

The policeman on the beat moved up the avenue impressively. The impressiveness was habitual and not for show, for spectators were few. The time was barely 10 o'clock at night, but chilly gusts of wind with a taste of rain in them had well nigh depeopled the streets.

Trying doors as he went, twirling his club with many intricate and artful movements, turning now and then to cast his watchful eye adown the pacific thoroughfare, the officer, with his stalwart form and slight swagger, made a fine picture of a guardian of the peace. The vicinity was one that kept early hours. Now and then you might see the lights of a cigar store or of an all-night lunch counter; but the majority of the doors belonged to business places that had long since been closed.

When about midway of a certain block the policeman suddenly slowed his walk. In the doorway of a darkened hardware store a man leaned, with an unlighted cigar in his mouth. As the policeman walked up to him the man spoke up quickly.

"It's all right, officer," he said, reassuringly. "I'm just waiting for a friend. It's an appointment made twenty years ago. Sounds a little funny to you, doesn't it? Well, I'll explain if you'd like to make certain it's all straight. About that long ago there used to be a restaurant where this store stands--'Big Joe' Brady's restaurant."

"Until five years ago," said the policeman. "It was torn down then."

The man in the doorway struck a match and lit his cigar. The light showed a pale, square-jawed face with keen eyes, and a little white scar near his right eyebrow. His scarfpin was a large diamond, oddly set.

"Twenty years ago to-night," said the man, "I dined here at 'Big Joe' Brady's with Jimmy Wells, my best chum, and the finest chap in the world. He and I were raised here in New York, just like two brothers, together. I was eighteen and Jimmy was twenty. The next morning I was to start for the West to make my fortune. You couldn't have dragged Jimmy out of New York; he thought it was the only place on earth. Well, we agreed that night that we would meet here again exactly twenty years from that date and time, no matter what our conditions might be or from what distance we might have to come. We figured that in twenty years each of us ought to have our destiny worked out and our fortunes made, whatever they were going to be."

"It sounds pretty interesting," said the policeman. "Rather a long time between meets, though, it seems to me. Haven't you heard from your friend since you left?"

"Well, yes, for a time we corresponded," said the other. "But after a year or two we lost track of each other. You see, the West is a pretty big proposition, and I kept hustling around over it pretty lively. But I know Jimmy will meet me here if he's alive, for he always was the truest, stanchest old chap in the world. He'll never forget. I came a thousand miles to stand in this door to-night, and it's worth it if my old partner turns up."

The waiting man pulled out a handsome watch, the lids of it set with small diamonds.

"Three minutes to ten," he announced. "It was exactly ten o'clock when we parted here at the restaurant door."

"Did pretty well out West, didn't you?" asked the policeman.

"You bet! I hope Jimmy has done half as well. He was a kind of plodder, though, good fellow as he was. I've had to compete with some of the sharpest wits going to get my pile. A man gets in a groove in New York. It takes the West to put a razor-edge on him."

The policeman twirled his club and took a step or two.
"I'll be on my way. Hope your friend comes around all right. Going to call time on him sharp?"

"I should say not!" said the other. "I'll give him half an hour at least. If Jimmy is alive on earth he'll be here by that time. So long, officer."

"Good-night, sir," said the policeman, passing on along his beat, trying doors as he went.

There was now a fine, cold drizzle falling, and the wind had risen from its uncertain puffs into a steady blow. The few foot passengers astir in that quarter hurried dismally and silently along with coat collars turned high and pocketed hands. And in the door of the hardware store the man who had come a thousand miles to fill an appointment, uncertain almost to absurdity,with the friend of his youth, smoked his cigar and waited.

About twenty minutes he waited, and then a tall man in a long overcoat, with collar turned up to his ears, hurried across from the opposite side of the street. He went directly to the waiting man.

"Is that you, Bob?" he asked, doubtfully.

"Is that you, Jimmy Wells?" cried the man in the door.

"Bless my heart!" exclaimed the new arrival, grasping both the other's hands with his own. "It's Bob, sure as fate. I was certain I'd find you here if you were still in existence. Well, well, well--twenty years is a long time. The old gone, Bob; I wish it had lasted, so we could have had another dinner there. How has the West treated you, old man?"

"Bully; it has given me everything I asked it for. You've changed lots, Jimmy. I never thought you were so tall by two or three inches."

"Oh, I grew a bit after I was twenty." "Doing

well in New York, Jimmy?"

"Moderately. I have a position in one of the city departments. Come on, Bob; we'll go around to a place I know of, and have a good long talk about old times."

The two men started up the street, arm in arm. The man from the West, his egotism enlarged by success, was beginning to outline the history of his career. The other, submerged in his overcoat, listened with interest.

At the corner stood a drug store, brilliant with electric lights. When they came into this glare each of them turned simultaneously to gaze upon the other's face.

The man from the West stopped suddenly and released his arm.

"You're not Jimmy Wells," he snapped. "Twenty years is a long time, but not long enough to change a man's nose

from a Roman to a pug."

"It sometimes changes a good man into a bad one," said the tall man. "You've been under arrest for ten minutes, 'Silky' Bob. Chicago thinks you may have dropped over our way and wires us she wants to have a chat with you. Going quietly, are you? That's sensible. Now, before we go on to the station here's a note I was asked to hand you. You may read it here at the window. It's from Patrolman Wells."

The man from the West unfolded the little piece of paper handed him. His hand was steady when he began to read, but it trembled a little by the time he had finished. The note was rather short.

"Bob: I was at the appointed place on time. When you struck the match to light your cigar I saw it was the face of the man wanted in Chicago. Somehow I couldn't do it myself, so I went around and got a plain clothes man to do the job."

JIMMY.

"

Glossary:

on the beat: usual path of a policeman on duty
avenue : road with trees on both sides
habitual : usual
intricate : complicated
chilly: very cold
gust: sudden violent rush of wind
pacific: peaceful
thoroughfare: a street much used by traffic and open at both ends
swagger: walk in a proud manner
vicinity: surroundings, neighbourhood
reassuringly: comfortingly and without any fear
torn down: pulled down, demolished
oddly: strangely
chum: close friend
chap: fellow, man
dragged out: caused to last an unnecessarily long time in
bustling around: moving around quickly
turns up: comes up, arrives
plodder: person who works slowly but earnestly
groove: way of living that becomes a habit
twirled: turned round quickly
club: heavy stick with one thick end
drizzle: rain in many fine drops
astir: in a state of excitement
dismally: gloomy
lasted: existed for more time
egotism: practice of talking about oneself
chat: friendly talk
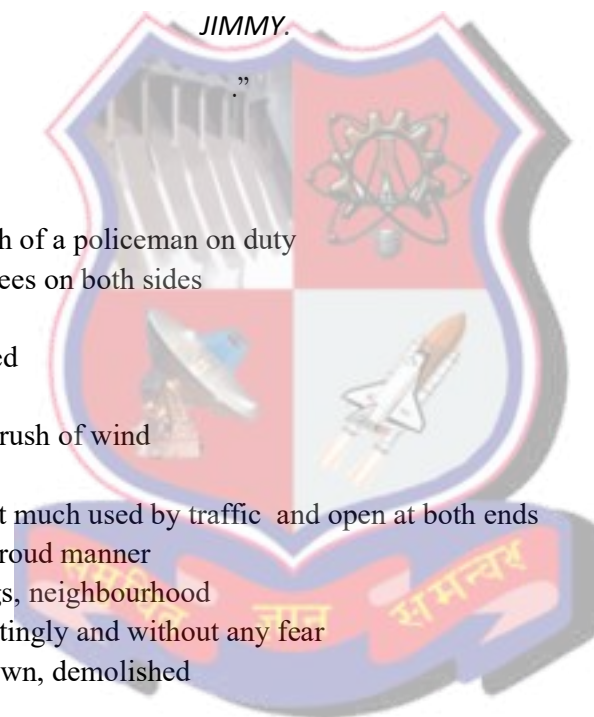
Sample Exercises:

Ex: 1. Choose the correct option:

1. The location of the story is near ….
    (b) Dehradun   (b) Mussoorie   (c) Shimla   (d) Dharmashala
3. Where was the man standing?
    (b) Near general store   (b) near medical store   (c) near bus stand   (d) near
        hardware store
4. When was the appointment made ?
    (a) Before 20 years   (b) before 15 years   (c) after 20 years
    (d) before 10 years
5. The man was waiting for his _____.
    (b) wife   (b) friend   (c) brother   (d) customer
6. The man and his friend Jimmy belong to _____ city.
    (a) New York   (b) London   (c) Mumbai   (d) Paris
7. What was the time of appointment?
    (a) 12 o'clock   (b) 11 o'clock   (c) 10 o'clock   (d) 9 o'clock
8. What did the tall man handed over to Bob?
    (a) A book   (b) a bag   (c) a chocolate   (d) a note
9. Who wrote the note?
    (a) Bob   (b) Jimmy   (c) Vera   (d) O'Henry

Ex: 2. Answer the following questions:

8. How did the policeman move up the avenue?
9. How was the weather that night?
10. What did the stranger say to the policeman?
11. What was there in place of the store at that spot twenty years ago?
12. Who was the stranger's friend?
13. Where did they take the last dinner?
14. What kind of man was his friend Jimmy?
15. What did Bob tell the man in the overcoat?
16. Was he really his friend Jimmy Wells?
17. Why was Bob under arrest?
18. Whose note was handed over to Bob in the end?

<u>Suggested Speaking Skills Topics (For 30 Marks of PA in LAB)</u>

1. Friendship
2. What is more important- duty or relations?
3. The choice between Right and Wrong .

UNIT 3 Stopping by Woods on a Snowy Evening

Robert Frost

Whose woods these are I think I know.
His house is in the village though;
He will not see me stopping here
To watch his woods fill up with snow.

My little horse must think it queer
To stop without a farmhouse near
Between the woods and frozen lake
The darkest evening of the year.

He gives his harness bells a shake
To ask if there is some mistake.
The only other sound's the sweep
Of easy wind and downy flake.

The woods are lovely, dark and deep,
But I have promises to keep,
And miles to go before I sleep,
And miles to go before I sleep

Glossary:

Woods : an area of land covered with thick growth of trees
Queer: beyond or deviating from the usual or expected
Farmhouse: a house attached to a farm
Frozen: turned into ice
Harness: an arrangement of leather straps fitted to a draft animal
Flake : a crystal of snow
Promise: a verbal commitment to do something in the future
Sleep : euphemisms for death

Sample Exercise:
Q.1 Where was the speaker going? What stopped him on the way?
Q.2 What according to the speaker will surprise the horse?
Q.3 What does the speaker wish to convey through the phrase "fill up with the snow"?
Q.4 What does the poet says about the owner of the woods?
Q.5 What are the sights and sounds that the poet experiences in the woods?
Q.6 What promises do you think the poet has to keep?
Q.7 What message do the last paragraph convey?
Q. 8 What is the role played by the horse in this poem?

Q. 9 Write a short note on :

(1) Description of nature

(2) Central idea of the poem
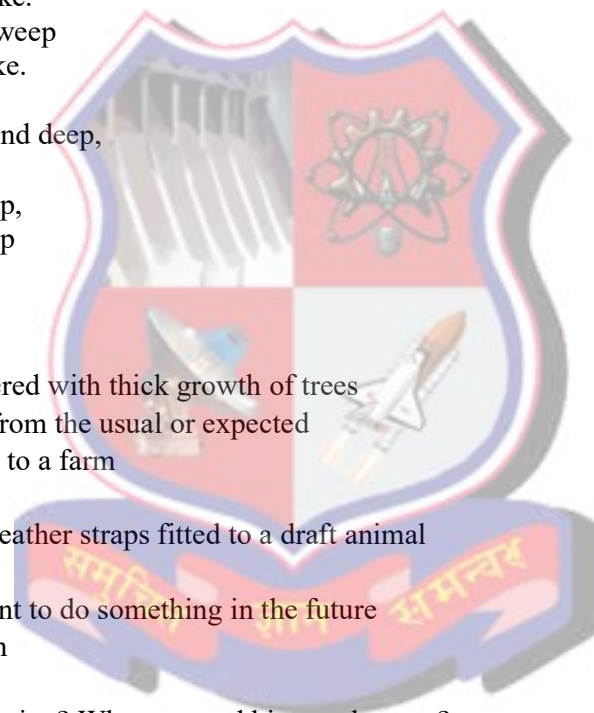
UNIT 4 Where the Mind is Without Fear

Rabindranath Tagore,

"Where the mind is without fear

and the head is held high,

where knowledge is free.

Where the world has not been broken up into fragments by narrow domestic walls.

Where words come out from the depth of truth,

where tireless striving stretches its arms toward perfection.

Where the clear stream of reason has not lost it's way

into the dreary desert sand of dead habit.

Where the mind is led forward by thee

into ever widening thought and action.

In to that heaven of freedom, my father,

LET MY COUNTRY AWAKE!"

—

Glossary:

Fragments- pieces

Head is held high- self respect

Domestic- pertaining to family.

Striving – try hard, motivated.

Tireless - without getting tired

Stream: river

Dreary: dull

Reason: intellect

Dead habit: old customs

Desert – dry area of land

Awake- to get up from sleep
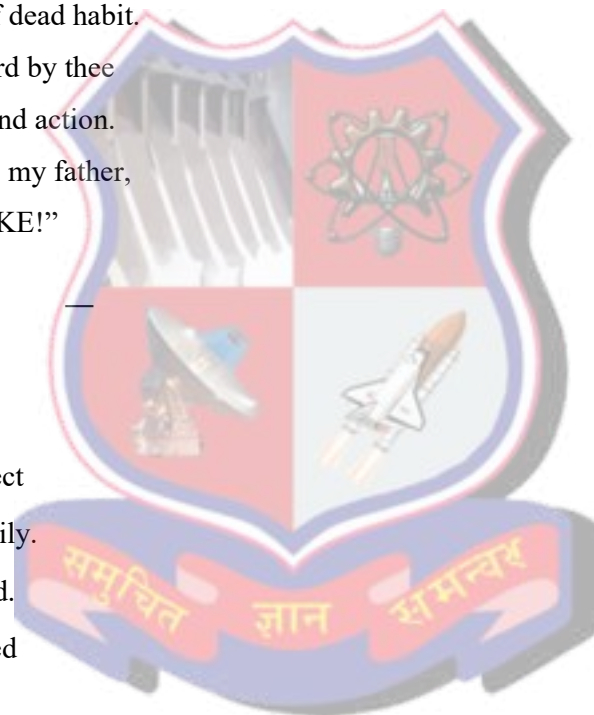
Sample Exercise:

Q.1 What is meant by "mind is without fear and head is held high". Tick the correct answer.

(i) to be fearless and self respecting

(ii) to be proud of one's high position .

(iii) to stand straight and be carefree.

Q. 2. What does the poet mean by "where knowledge is free"?

Q.3. The 'domestic walls' are usually associated with safety, comfort and love.What is the meaning of 'narrow domestic walls'? Choose the correct answer.

(i) small houses which make us feel cramped

(ii) ideas which are petty and narrow-minded.

iii) a house divided into rooms by walls.

Q.4. What according to the poet do people tirelessly strive towards?

Q.5. How does the poet describe the old habit?

Q.6 How does the poet describe 'heaven of freedom'?

Q.7. Who does the poet address as 'thee' and my father?

Q.8 What kind of freedom does the poet desire for his country?

Q.9 Write a short note on the central idea of the poem.

SECTION 4

WRITING

Email Writing

The email writing format is the same for each of the categories, though the choice of words and language differ depending upon the type of email. One can use friendly and casual language in informal emails. The language used in formal emails should be professional, clear, and formal.

The email writing format is

From: Sender's email id
To: Recipient's email id
Cc: Other individuals receiving the same mail with visible ids
Bcc: Other individuals receiving the same mail with invisible ids
Subject: Title or the reason of writing mail
Salutation: Words like Dear, Respected, Hi etc.
Main body: the main content of the email
1. Introduction 2. Matter in detail 3. Conclusion
Closing: Ending Statement
Attachments: Attached Files with emails
Signature Line: Sender's name, signature, and other details of contact

Email Format

Let us look at the important **steps to follow** when writing a formal email.

1. Subject line

Grab attention with the subject line. The first part of an email which your recipient sees is the subject of the email. If you do not put it well, you risk having your email not opened until later or at all. Here are some things to keep in mind:

- Make the subject line **specific, simple, and to the point**. For example, instead of *'The internship report you asked for'*, write, *'Internship Report, {date/week/month}'*.
- The subject line should be **short**. Ideally, your subject line should stand around six words.
- Keep the most **important and informative words in the beginning** of the subject line.
- Use **markers** like *Fwd, Reply, Urgent*, or *Notice* to further narrow down the subject. It informs your reader about the nature of your email.

Some of the examples of good subject lines in formal emails can be:

- Marketing Budget, October 2018
- List of New Freelancers
- Job Application for the Post of XYZ
- Leave Application
- Query Regarding the Missing Information in the Document
- Contract Agreement - XYZ Assignment

2. Salutation

Each email is directed towards someone. Start your formal email with addressing the recipient in a manner fitting the relationship you have with them.

For people you are unfamiliar with or do not know the names of, use '*To Whom It May Concern*' or '*Dear sir/madam*'.

For senior officials, stick to their designation or follow it with their name, for example, '*To the Manager*', '*Dear Dr. Ghosh*', or '*Dear Ms. Kapoor*'.

Among colleagues, it may be appropriate to simply precede the name with a '*Hi*'.

Do not skip the salutation and always be respectful. Never use nicknames or just surnames or first names in a formal email.

3. Body of the email

The body text is the main part of your email. It is important to follow a certain pattern when writing the body of your email.

- The **opening paragraph should set the tone and reason** for your email. Introduce yourself if you are a stranger to the person you are writing to, and jot down why you are writing to them.
- For example, you can begin with '*My name is Abc, and this email is with reference to Xyz.*' or '*This is with reference to the marketing budget as discussed in the meeting.*'
- **Elaborate on your concern, question, or response** as comprehensively as possible. Write in a way that is easy to understand, but at the same time, do not lose your point in providing unnecessary information. Say only what is required.
- The **closing of the email** should also support the nature of your email. If you are asking a question, close with something like '*Hope to have an answer from you soon*', or '*Looking forward to hearing from you soon*', and if you are addressing a question, end with '*Hope I have sufficiently answered your query/doubts.*'
- Signature
- These are the last words of your email, capable of forming a lasting impression on your reader.

- Sign off with a simple word or phrase, which conveys respect. Safe choices are *'Best regards'*, *'Warmly'*, *'Sincerely'*, *'Kind regards'*, or simply *'Thanks'*.
- If you are writing to someone for the first time or someone who is not an immediate colleague or senior, use your full name.

- Furnish your name with contact information. Your phone number and/or work address are enough.
- If you are writing on behalf of or as an employee of an institution, make sure to mention it along with adequate contact details
- To make your signature even more effective, you may also choose or design an attractive (but not flashy) template.

Formal Email Samples

Formal emails are sent in a whole variety of situations. While they use the same rules, they may have to be modified according to their purpose.

Now that you are familiar with the format of a formal email, let us have a look at few email samples.

Email sample 1: A request

Subject: Extension on Report Deadline

Dear Mr./Ms. {Recipient's sir name},

I am writing this to request you for an extension on the XYZ project report which is due on {date}. My mother has taken ill unexpectedly, and I must leave for home tonight. I'm afraid it will take me a week before I can return to the office and complete the report.

Kindly grant me an extension till {date} for the same. I promise to deliver the project report by then.

Sincerely,
{Your name}
{Phone number}
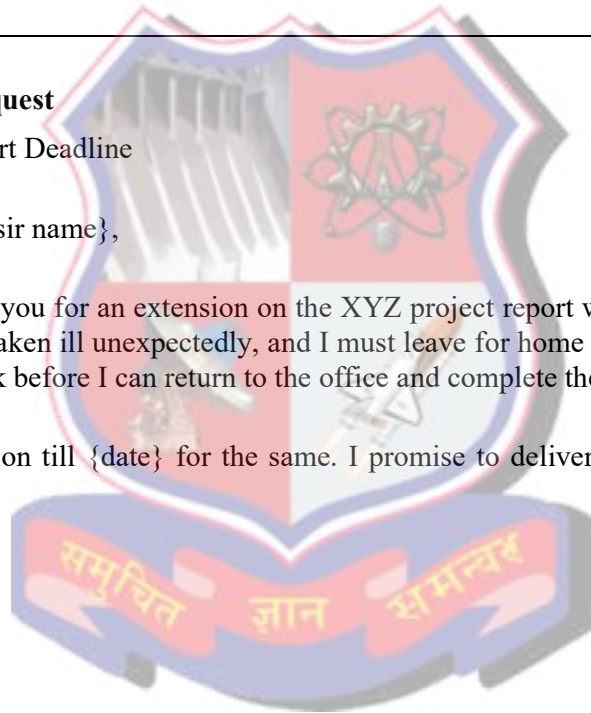
Sample Emails

1.Inquiry

Question: Draft an email to make an inquiry for raincoats and umbrellas from a wholesaler in Mumbai .

To: rambrellasuppliers@gmail.com

From: tirupatiagency@gmail.com

Subject: Inquiry for different varieties of raincoats and umbrellas.

Dear Sir,

We would like to buy raincoats and umbrellas (product) for the next monsoon. You are a leading manufacturer of raincoats and umbrellas. We have also visited your website and we are interested in starting business with you.

We would like to see your company catalogue which has details of all the products that you manufacture. We would like to have all the details of different models and sizes of your products we intend to sell them during the coming rainy season.

Let us know the prices of your products and the rate of discount you allow Please inform us the time you will take to deliver the goods.

We hope to receive a prompt reply to this inquiry.

Thank You

Yours sincerely,

_____(Name)

2. Reply to inquiry

Question: You have received an inquiry for raincoats and umbrellas Draft a suitable reply.

To: tirupatiagency@gmail.com

From: rambrellasuppliers@gmail.com

Subject: reply to inquiry for different varieties of raincoats and umbrellas.

Dear Sir,

We have received your mail regarding the inquiry for different raincoats and umbrellas. We appreciate your interest in our products.

We have attached our company catalogue of all our products that we manufacture and price list with this mail.

We shall allow you 30% discount on the prices of these products. We can supply your goods within 10 days of receiving the order. You have to settle the account within 15 days of receiving the goods.

Please note that we will give you 3% extra rebate if your order exceeds Rs. 500000.

 We are keen on executing your order quickly and carefully.

Thank You

Yours sincerely,

_____ (Name)

3. Placing an order

Question: Place an order of Air conditioners for your newly constructed branch office.

To: kabirworld21@gmail.com

From: gujaratagro@gmail.com

Subject: order for air conditioners for new office

Dear Sir,

We have received your mail reply to our inquiry about the air conditioners .We are thankful to you for your prompt reply.

We have studied the specification of the air conditioners and have found that it is according to our need. The terms and conditions of business stated by you are suitable to us. So, we request you to supply us 15 air conditioners as shown below:

Sr.No	Type	capacity	Quantity	Unit Price	Total Price
1	Voltas AC with inverter	1.5 ton	3	35000	105000
2	Voltas AC with inverter	2.0 ton	5	52000	260000
3	Voltas AC without inverter	1..5ton	2	33000	66000
4	Voltas AC without inverter	2.0 ton	5	50000	100000

Total   531000

Please note that the air conditioners ought to be installed before 15th May 2021 since our new office is to start functioning from 18th May 2021..

Thank You

Yours sincerely,

_____(Name)

4. Complaint: Delay in Delivery of goods

Question: You have placed an order for table and ceiling fans for coming summer season. But the order has not been executed even after one month. Draft the complaint to the supplier about delay in delivery of goods.

To: newindia@gmail.com

From: Gujaratelectronics@gmail.com

Subject: complaint for delay in delivery of fans.

Dear Sir,

We refer to our order dated 2nd April 2021 for Usha Table and Ceiling Fans. We have specially instructed you to supply them before 18th April 2021but we are sorry we have not yet received the goods.

We had ordered the goods for the coming summer season. The delay in delivery of our order has caused great loss to our business.

We, therefore , request you to supply them within 7 days of receiving the mail. If you fail to do so, we shall be compelled to cancel our order.

We look forward to your prompt and positive response..

Thank You

Yours sincerely,

_____(Name)

5. Adjustment to above Complaint.

New India Electrical Suppliers have received a complaint from Gujarat Electronics, Ahemdabad about delay in delivery of goods. Draft a suitable reply.

To: Gujaratelectronics@gmail.com

From: newindia@gmail.com

Subject: reason for delay in delivery of fans

Dear Sir,

We have received your mail regarding delay in delivery of your order for table and ceiling fans. We are sorry for the inconvenience caused to you due to this delay.

The workers and staff in our office were on strike so the administrative work was badly paralyzed . Due to this we could neither execute your order nor intimate you about the delay in delivery.

However, the strike has been called off now. We hope we shall be able to dispatch the goods with four or five days. We trust you will understand our position and cooperate.

Thank You

Yours sincerely,

_____ (Name)

Complaint: shortage in goods

Question: You have placed an order for 500 compass boxes. But the consignment had only 475 boxes. Draft a complaint to the supplier.

To: omegainstruments@gmail.com

From: swastikstationers@gmail.com

Subject: complaint for shortage in number of boxes..

Dear Sir,

We are thankful to you for executing our order no. 24/A dated 20th April 2021 for500 Camel Compass boxes. However, we are sorry to point out that the execution of the order has not been as careful as it ought to be.

Our shop assistant has opened the container of compass boxes. He has reported that there are 475 compass boxes in it instead of 500.

Please make the necessary adjustment. We are sure that you will execute our orders more carefully in future.

Thank You

Yours sincerely,

_____(Name)

Adjustment to above Complaint.

Omega Instruments have received a complaint from Swastik Stationers that he has received 475 instead of 500 ordered by him. Draft a suitable reply.

To: swastikstationers@gmail.com

From: omegainstruments@gmail.com

Subject: adjustment for remaining 25 boxes

Dear Sir,

We have received your mail on 25th May 2021. We regret to note that you have received 475 Compass Boxes instead of 500 against your order no.24/A of 20th April 2021 .

We have dispatched the remaining 25 compass boxes by Maruti Couriers. You will receive them tomorrow evening.

We request you not to judge our services by this isolated incident. We shall try to render consistently efficient services in future.

Thank You

Yours sincerely,

_____ (Name)

Complaint: damaged goods

Question: You have placed an order for 250 Flower Vases. But you found that the consignment had 23 flower vases in damaged condition. Draft a complaint to the supplier.

To : duraguardglasses@gmail.com

From: suhasininovelties@gmail.com

Subject: complaint for damaged flower vases.

Dear Sir,

We have received 250 flower vases against our order no. 76/C dated 20th June 2021. However, when our shop assistant opened the box, he found 23 vases in damaged condition.

This damage is due to the fact that you have not packed the goods in thermocoal lined boxes according to our instructions.

Please send us 23 new flower vases. Alternatively permit us to adjust their price in the settlement of the invoices.

Thank You

Yours sincerely,

_____(Name)

Adjustment to above Complaint.

Duraguard Glasses Limited have received a complaint from Suhasini Novelties that he has received 23 flower vases in damaged condition. Draft a suitable reply.

To: suhasininovelties@gmail.com

From: duraguardglasses@gmail.com

Subject: adjustment for damaged flower vases

Dear Sir,

We have received your mail on 25th July 2021. We are sorry to note that you have received 23 flower vases in damaged condition out of total 250 in the consignment against your order no.76/C of 20th June 2021 .

We accept our liability in this matter . We have enclosed a credit note for Rs. 2300 along with this mail against 23 damaged flower vases.

We regret the trouble caused to you in this transaction. We assure you to execute your orders more carefully in future.

Thank You

Yours sincerely,

_____ (Name)

Exercise:

1. You have placed an order for 15 HP scanners to National Systems Limited, but received only 12 scanners. Draft an email to the supplier complaining about it.

2. Draft an email asking for the illustrated catalogue and quotation of certain electronic goods required by your firm.

3. Draft a complaint to Swagat Furnitures asking for compensation as you found some of the pieces of furniture delivered in the damaged condition.

4. The Book Store in your college requires 15 copies of Oxford Advanced Dictionary. Place an order for it.

5. The proprietor of sports goods manufacturing company has received a complaint from one of their customers regarding non-execution of his order in stipulated time. Draft a suitable reply.

6. You are interested in purchasing a variety of watches and clocks from Quartz Palace. Draft an email for inquiry.

7. You have an email inquiring about prices of plastic toys manufactured by you. Draft a reply.

8. Place an order for 50 Godrej Filing Cabinets for your newly constructed office.

9. You have received a consignment of sugar bags and found shortage in weight .Draft an email to complaint about it.

10. One of your customers has complained the curtains supplied by you are of inferior quality and not in accordance with the samples shown to him. Draft a reply expressing your regrets and showing willingness to replace the goods.
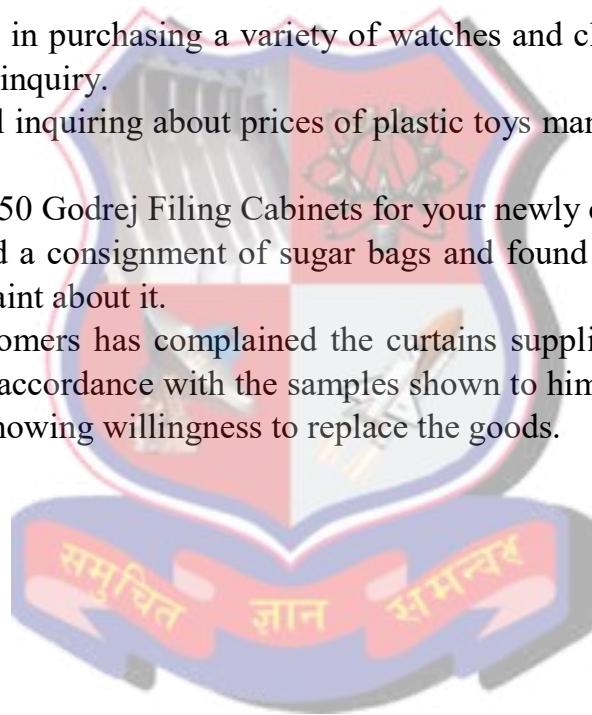
Business Letters

A **business letter** is a letter from one company to another, or between such organizations and their customers, clients, or other external parties. The overall style of letter depends on the relationship between the parties concerned. Business letters can have many types of content, for example to request direct information or action from another party, to order supplies from a supplier, to point out a mistake by the letter's recipient, to reply directly to a request, to apologize for a wrong, or to convey goodwill. A business letter is useful because it produces a permanent written record, and may be taken more seriously by the recipient than other forms of communication.

Qualities of a Good Letter:

The 7 Cs of business communication which make it are:

1. Clarity
2. Correctness
3. Conciseness
4. Courtesy
5. Concreteness
6. Consideration
7. Completeness

#1: Clarity

Practicing clarity in your communication ensures that the message is received accurately. You should know what you wish to say and how to say it. Use language that can be easily understood, and resist the temptation to include unnecessary information.

Example:

Instead of saying, "We have considered the consequences of the existing policy on the hiring strategies we employ with our human resources department and updated them accordingly," say, "We have updated our hiring policy."

#2: Correctness

You must communicate with correctness – correct grammar, language, data, etc. In written communication, you should proofread before sending.

Example:

"You may enter the building during opening hours but must show relevant I.D."

Immediately, the recipient of this information has two questions:

- "What are the opening hours, and what ID is considered relevant?

Correctness in this communication is conveyed by saying, "You may enter the building during the opening hours of 9am to 5pm daily, but must show your employee identity card."

#3: Conciseness

Never use more words than is necessary. Brevity is more easily understood, though you must avoid discourtesy. Concise messages save you and the recipient time, too. To be concise, follow these rules:

- Eliminate unnecessary words

- Use action verbs
- Remove repetition

Example:

"As a matter of fact, during the month of June, all employees must ensure that they wear appropriate clothing to ensure they stay cool while the air-conditioning is being repaired."

Becomes:

"Indeed, during June, employees must wear appropriate clothing to stay cool while the air-conditioning is repaired."

#4: Courtesy

Employ courtesy when communicating. This shows you respect the recipient and helps to build goodwill. You must ensure that you are sincere, thoughtful, and do not use discriminatory language.

Example:

"I don't appreciate how your team ignores requests for collaboration from my team. The work we do is equally as important as your work. Could you make certain that your team collaborates more readily from now on?"

Such a message is unlikely to encourage a negative response. Instead, a more effective approach would be:

"I understand that your team is extremely busy and receives many requests to collaborate on project work. However, my team is working a highly urgent project with enormous mutual benefits. I would greatly appreciate if you could ask your team to collaborate more effectively with mine to move this project forward faster. If there is any help that we can provide to make this happen, please let me know."

#5: Concreteness

Concrete communication is specific, clear, and meaningful. It avoids vagueness, uses available facts and figures to add authenticity, and builds around an active voice.

Example:

An example would be poor communication of underperformance during a one-to-one. You might say, "Your sales numbers are on the low side. They need to be improved to at least the team's average."

Give your employee concrete direction with evidence and an active voice:

"Your sales conversion rate is below 50%. You must improve this to the team average of 65% or higher."

#6: Consideration

Be considerate with your messaging by putting yourself in the position of the recipient. Focus on communicating to 'you', considering needs and issues experienced by the recipient.

Example:

Imagine that you are unable to pay a promised bonus. How do you communicate this?

"We are unable to pay bonuses now. The business is awaiting payment from a major client. Once this payment is received, we can consider paying contractual bonuses as soon as is practicable."

This could be better conveyed as follows:

"Unfortunately, we are not presently in the position to pay your bonus. However, as soon as our major client has settled their account, we will pay any bonuses owed to you. We're sorry about this delay, but are sure you understand our need for positive cash flow and the long-term benefits this will deliver to you."

#7: Completeness

Your message should be complete, delivering all the facts needed for the recipient to make an informed decision. Incomplete messages often receive poor responses.

To ensure your communication is complete, ask if it answers the what, when, why, who, where, and how.

Example:

"You haven't completed the task that I set you," is a message full of ambiguity. Instead, make sure you include all relevant facts:

"The data analysis for client ABC that I asked for on March 5 should have been completed by today. Will you have it finished this afternoon?"

Format:

A business letter must include:

1. *Address*

The address of the person receiving the correspondence includes a formal name, street address, city, state, and pin code.

2. *Date*

The date is put for any business communication.

The date is a critical piece of information documenting when the correspondence was sent.

This is important for correspondence that may be kept for future reference.

3. *Subject Line*

This indicates the subject of the letter so the receiver gets the idea what is the letter about.

4. *Salutation*

The salutation is the formal way of addressing the person.

Common salutations are *Dear* or *To Whom It May Concern*.

5. *Introduction*

The first few sentences of a letter are introductory.

The introduction section introduces the subject of the letter.

It is a summary in a sentence or two that explains the goal of the letter.

For example, an introduction may be something like:

I am writing today to further explore a vendor relationship with XYZ Corporation.

6. *Body of the Letter*

The body of the letter is where the bulk of the information is shared.
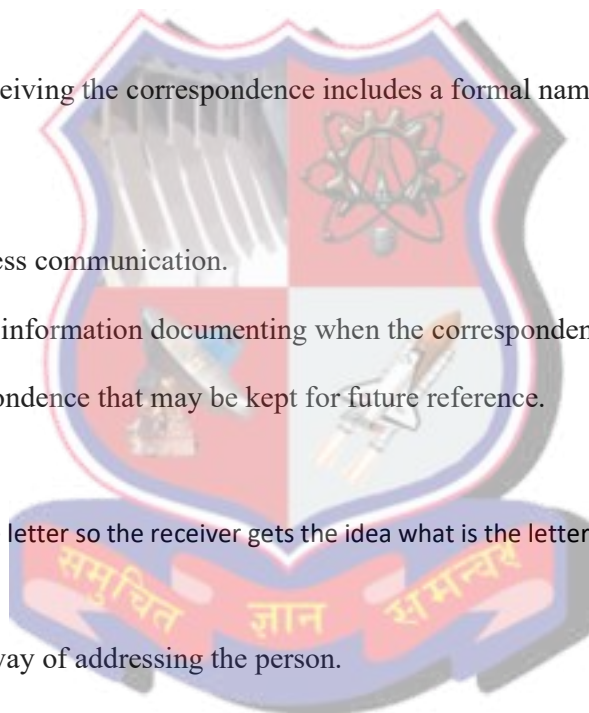
The body of the letter explains in detail all aspects of what is being communicated.

This would include detail of the information being shared.

For instance, the body may be something like this:

We understand that XYZ Corporation can provide tools for 10% less than other competitors. And, that the focus on service after the sale is amongst the best in the industry.

7. *Closing*

The closing of the letter summarizes what the letter was about and any next steps or action items.

This section gives the reader a heads up that the communication is coming to a close.

For instance, the closing may be something like this:

Please call me at your earliest convenience to discuss a vendor relationship and to explore if we can come to a mutually beneficial relationship. I look forward to speaking with you soon.

8. *Signature*

The signature section has a complimentary closing.

Examples are *Sincerely, Warmest Regards, Respectfully Yours, Very Truly Yours,* or *Cordially Yours*.

Be sure to gauge the audience when selecting a complimentary closing.

After the complimentary closing, space is left for the signature that goes above the typed name and title of the person sending the letter.

ABC Corporation
2435 West Elm Street
Small Town, USA 11223
888-987-6543

June 19, 2019   ← Date

James Smith
XYZ Corporation   ← Address
Big Town, USA 21212

Dear Jim: ← Salutation

Introduction →

I am writing today to further explore a vendor relationship with XYZ Corporation.

We understand that XYZ Corporation can provide tools for 10% less than other   ← Body
competitors. And, that the focus on service after the sale is amongst the best in the
industry.

Please call me at your earliest convenience to discuss a vendor relationship and to
explore if we can come to a mutually beneficial relationship.   ← Closing

I look forward to speaking with you soon.

Sincerely,

Jack Jones   ← Signature
Jack Jones
ABC Corporation

Sample Letters

1. Order Letter

From

_____
_____
_____

Date: _____ (Date on Which Letter is Written)

To,

_____
_____
_____
_____

Subject: Order Letter

Dear Sir,

I am the purchase manager of XYZ Company and I am personally writing this letter to order goods for our site work. As we have been purchasing goods from you company since some time now, I am writing this letter to order material.

Along with this letter I am attaching the list of materials or goods that is needed. Please make sure you send it across in a week as the requirement is a bit urgent this time.

I hope there is enough stock left with you to complete this order of ours. Thanking you for your support and timely orders till date.

Thanking You,

Yours truly,

_____

Name and Signature

2. Complain letter

From

_____ (your name)
_____
_____ (your address)

Date _____ (date of writing letter)

To

_____ (name of recipient)
_____ (designation)
_____ (name of organization)
_____ (address)
_____

Dear Sir/Madam,

I purchased a ….(mention item with specifications) from your store on …(mention date) . The piece is on …. warranty (mention duration) . It was delivered on …(mention delivery date, if any), and your representative familiarized me with its operation on …(mention date), …(briefly explain the problem faced with the piece and repairs undertaken if any).

Since the piece is on warranty …, I request you to kindly …(mention how you want concerned authority to assist you). I am enclosing a copy of …(mention documents you are enclosing along with the letter). I am hoping for immediate action taken regarding this issue.

Thanking You
_____ (your name)
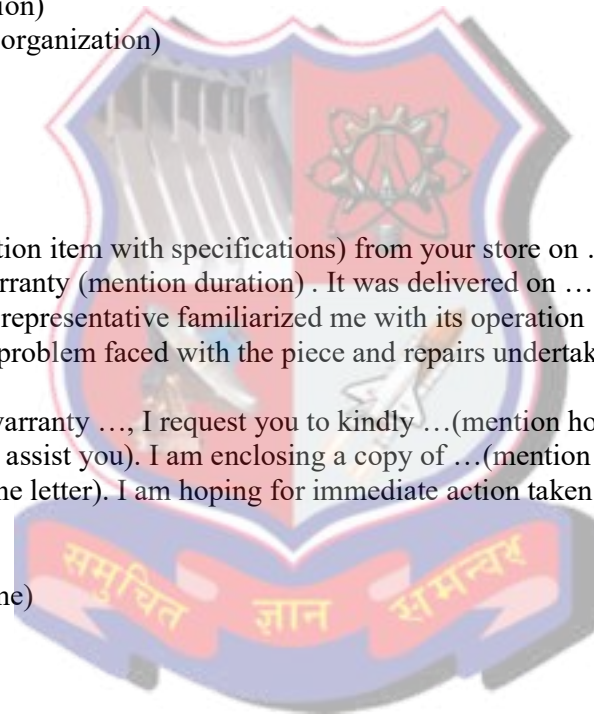
3. Leave Application

Sender's name and address:

Date:

Receiver's name and address:

Subject: Sick Leave application

Respected Mr. /Mrs. [Name of the recipient] (or Sir/Madam),

I am writing this application to notify you that I am suffering from severe viral infection and therefore, I need sick leave from work. I caught this infection last night and I will not be able to come to the office for at least [number of days]. As notified by my doctor, it is best that I take rest and recover properly before resuming work. The letter from the doctor is also attached for your reference.

Kindly grant me a leave for [number of days] days.
.
I hope you will understand and grant me a leave for aforementioned period. Waiting your approval.

Yours Sincerely,

[Your Name]

[Signature]
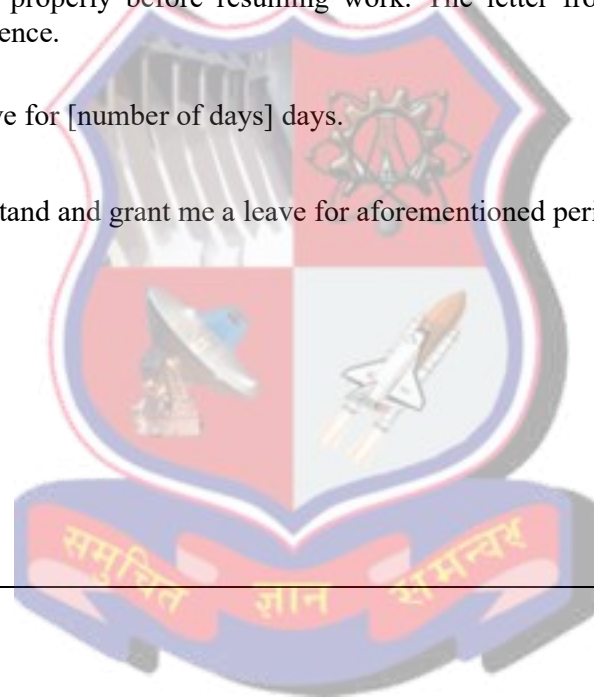
GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
I – Semester

Course Title: **Environment and Sustainability**
(Course Code: 4300003)

Diploma programme in which this course is offered	Semester in which offered
Chemical, Mechatronics, Computer	First
Civil, Environment, Mining, Architectural Assistantship, Mechanical, Automobile, Marine, Metallurgy, Fabrication, Electrical, Electronics and Communication, Instrumentation and Control, Bio Medical, Power Electronics, IT, Textile Manufacturing, Textile Processing, Textile Design, Printing, Plastics, Ceramics, CACDDM , Computer Science and Engineering.	Second

1.   RATIONALE

For a country to progress, sustainable development is one of the key factors. Environment conservation and hazard management is of much importance to every citizen of India. Considerable amount of energy is being wasted. Energy saved is energy produced. Environmental pollution is on the rise due to rampant industrial mismanagement and indiscipline. Renewable energy is one of the answers to the energy crisis and also to reduce environmental pollution. Therefore this course has been designed to develop a general awareness of these and related issues so that the every student will start acting as a responsible citizen to make the country and the world a better place to live in.

2.   COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- **Adopt the sustainable practices to resolve the environment related issues.**

3.   COURSE OUTCOMES (Cos)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:

   a) Adopt relevant ecofriendly product in the given situation to protect ecosystem
   b) use relevant method of pollution reduction in the given situation
   c) Use of renewable resources of energy for sustainable development
   d) Use the relevant techniques in given context to reduce impact due to climate change
   Use relevant laws and policies for developing the sustainable environmental development

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T/2+P/2)	Examination Scheme				
				Theory Marks		Practical Marks		Total
L	T	P	C	CA	ESE	CA	ESE	Marks
3	0	0	3	30*	70	0	0	100

(*): Out of 30 marks under the theory CA, 10 marks are for assessment of the micro-project to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for the assessing the attainment of the cognitive domain UOs required for the attainment of the COs.

*Legends: **L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit, **CA** - Continuous Assessment; **ESE** - End Semester Examination.*

5.   SUGGESTED PRACTICAL EXERCISES – Not Applicable

The following practical outcomes (PrOs) that are the sub-components of the COs. *Some of the PrOs marked '*' are compulsory,* as they are crucial for that particular CO at the 'Precision Level' of Dave's Taxonomy related to 'Psychomotor Domain'.

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
	Total		**44**

Note

i. More **Practical Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list**.**

ii. The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency..

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
1	Prepare of experimental setup	20
2	Operate the equipment setup or circuit	20
3	Follow safe practices measures	10
4	Record observations correctly	20
5	Interpret the result and conclude	30
	Total	**100**

6.   MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED – (Not Applicable)

These major equipment with broad specifications for the PrOs is a guide to procure them by the administrators to usher in uniformity of practicals in all institutions across the state.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1		

7.   AFFECTIVE DOMAIN OUTCOMES

The following **sample** Affective Domain Outcomes (ADOs) are embedded in many of the above mentioned COs and PrOs. More could be added to fulfil the development of this competency.

a) Work as a leader/a team member.
b) Follow ethical practices.
c) Practice environmental friendly methods and processes. (Environment related)

The ADOs are best developed through the laboratory/field based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

    i.   'Valuing Level' in 1st year
    ii. 'Organization Level' in 2nd year.
    iii. 'Characterization Level' in 3rd year.

8.   UNDERPINNING THEORY

Only the major Underpinning Theory is formulated as higher level UOs of *Revised Bloom's taxonomy* in order development of the COs and competency is not missed out by the students and teachers. If required, more such higher level UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at Application and above level)	Topics and Sub-topics

Unit – I Ecosystem	1a. Explain the Structure with components of the given Ecosystem
	1b. Explain Carbon, Nitrogen, Sulphur and phosphorus cycle for the given ecosystem.
	1c. Justify the need to conserve the given Ecosystem on the w.r.t. following points:
	  • carrying capacity of earth
	  • Biomes,
	  • Ecologically sensitive area
	1d. Explain the term biodiversity with its importance.
	1e. Illustrate the importance of IUCN red list in environmental engineering.
	1f. Calculate global ecological overshoot and virtual water requirement of given natural and man-made materials.
		1.1 Structure and components of ecosystem
		1.2 Types of Ecosystem, changes in ecosystem
		1.3 Various natural cycles like carbon, Nitrogen, Sulphur, Phosphorus
		1.4 Ecosystem conservation, carrying capacity of earth, Biomes in India, (ESA) Ecologically sensitive areas
		1.5 Bio diversity, its need and importance, International Union for Conservation of Nature (IUCN) red list
		1.6 Concept of Ecological foot print, virtual water, global ecological overshoot

Unit – II Pollution and its types	2a. Explain the term, "pollution and pollutant" in the given situation. 2b. Classify the air pollution on the basis of its source 2c. Use relevant equipment to control given type of air pollution.	2.1. Definition of pollution and pollutant 2.2. Air pollution, classification and its sources 2.3. Air pollution control Equipments 2.4. Water pollution, pollution parameters like BOD,COD, pH, Total suspended solids, Turbidity, Total Solids 2.5. Waste water treatment like primary,

Unit	Unit Outcomes (UOs) (4 to 6 UOs at Application and above level)	Topics and Sub-topics
	2d. Explain relevant techniques of treatment to deal with given type of water pollution. 2e. Apply relevant techniques of Solid waste management based on its characteristics. 2f. Explain drawbacks of noise pollution in given situation. 2g. Describe the environmental degradation due to Plastic waste and E- waste	secondary and tertiary 2.6. Solid waste generation, sources and characteristics of Muncipal solid waste 2.7. Collection and disposal of Muncipal waste and Hazardous waste 2.8. Noise pollution- its effects, sources and measurement 2.9. Plastic waste and its hazard 2.10. E waste and its hazard
Unit– III Renewable sources of energy	3a. Justify the need of renewable energy adopting relevant energy policy in given situation. 3b. Explain the working of the solar thermal and PV systems with sketch in given situation. 3c. Justify the need of Advanced collector, Solar Pond, Solar water heater, Solar dryer in the given system. 3d. Emphasize the importance of wind power in India 3e. Select the relevant type of wind turbines in the given situation. 3f. Identify the relevant types of Sources of biomass energy. 3g. Draw the neat labelled diagram of simple biogas plant to explain its working. 3h. Identify the sources of the energy generation for the given situation.	3.1 Need of Renewable energy and energy policy 3.2 Solar energy: National solar mission 3.3 Features of solar thermal and PV systems Advanced collector, Solar Pond, Solar water heater, Solar dryer, polycrystalline, monocrystalline and thin film PV systems 3.4 Wind Energy: Growth of wind power in India 3.5 Types of wind turbines – Vertical axis wind turbines (VAWT) and horizontal axis wind turbines (HAWT) 3.6 Types of HAWTs – drag and lift types 3.7 Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel 3.8 Anaerobic digestion, Biogas production mechanism, utilization and storage. 3.9 New energy sources: Geothermal energy, Ocean energy sources, Tidal energy conversion, Hydrogen energy
Unit– IV Climate Change	4a. Explain the term, "climate change" in context of environment. 4b. Describe the ill effects of Global warming due to various causes arising in the given situation. 4c. Explain the term, "greenhouse effect" with its causes. 4d. Relate the impact of Ozone depletion in climate change due to its causes.	4.2 Definition of climate change 4.3 Global warming-causes, effect, process 4.4 Greenhouse effect 4.5 Ozone depletion 4.6 Factors affecting climate change 4.7 Impact and mitigation 4.8 Climate change management

Unit	Unit Outcomes (UOs) (4 to 6 UOs at Application and above level)	Topics and Sub-topics
	4.1 Identify Factors affecting climate change in given locality. 4e. Justify the need of relevant Climate change management system to reduce the impact of climate change in the given context.	
Unit– V Environmental legislation and sustainable practices	5.a Use relevant policy or law in relation with environment in given situation 5.b Relate the relevant provision of given act in given situation. 5.c Explain the necessity of the Environmental management system in given situation. 5.d Use the principle of Rain water harvesting in the given situation. 5.e Justify the necessity of Green building in India. 5.f. Adopt the relevant rating system for energy calculation for the given building. 5.f Explain the terms, "Cradle to cradle concept" and "Life cycle analysis" 5.g Emphasize the importance of Carbon credit system in India. 5.h Explain the importance of 5R concept.	5.1 Environmental policies in India 5.2 Air act, water act, Environment protection act, wild life protection act, Forest conservation act, Biodiversity act 5.3 Environmental management system: ISO 14000, definition and benefits 5.4 Rain water harvesting 5.5 Green building and rating system in India 5.6 Cradle to cradle concept and Life cycle analysis 5.7 Green label 5.8 Carbon credit system its advantages and disadvantages 5.9 Concept of 5R(Refuse, Reduce, Reuse, Repurpose, Recycle) 5.10 Eco tourism: advantages and disadvantages

Note: The UOs need to be formulated at the 'Application Level' and above of Revised Bloom's Taxonomy' to accelerate the attainment of the COs and the competency.

9.   SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A	Total Marks
I	Ecosystem	08	6	6	2	14
II	Pollution and its types	10	4	6	6	16
III	Renewable sources of energy	10	4	6	6	16
IV	Climate Change	08	4	6	4	14

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A	Total Marks
V	Environmental legislation and sustainable practices	06	5	3	2	10
	Total	**42**	**12**	**28**	**30**	**70**

Legends: *R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)*

Note*: This specification table provides general guidelines to assist student for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may vary slightly from above table.*

10. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should conduct following activities in group and prepare reports of about 5 pages for each activity, also collect/record physical evidences for their (student's) portfolio which will be useful for their placement interviews:

a) Prepare specification of some renewable sources of energy.
b) Undertake micro-projects in teams
c) Give seminar on any relevant topic.
d) Undertake a market survey of different green materials.
e) Prepare showcase portfolios.
f) Prepare report on various issues related to environment and sustainable development
g) Publish a research paper on themes related to environment and sustainable development.
h) Compare the pollution (water, air and noise) data of various cities with standard values as laid by pollution control board.
i) Undertake some small mini projects on various issues related to environment and sustainable development.
j) Submit a report on visit to an energy park
k) Prepare power point on clean and green technologies
l) Submit a report on visit to garbage disposal system in your city/town.
m) Submit a report on analysis of the life cycle of any one or two eco-friendly product/s.
n) Calculate ecological footprint using various calculator available on web with a report recommending ways and means to reduce ecological footprint.
o) Give seminar on relevant topic.
p) Undertake micro-projects.

11. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a) Massive open online courses (***MOOCs***) may be used to teach various topics/sub topics.
b) Guide student(s) in undertaking micro-projects.
c) ***'L' in section No. 4*** means different types of teaching methods that are to be employed by teachers to develop the outcomes.

d) About ***20% of the topics/sub-topics*** which are relatively simpler or descriptive in nature is to be given to the students for ***self-learning***, but to be assessed using different assessment methods.

e) With respect to ***section No.10***, teachers need to ensure to create opportunities and provisions for ***co-curricular activities***.

f) Guide students on how to address issues on environment and sustainability

g) Guide students for using data manuals.

h) Guide students for using data manuals.

i) Arrange visit to nearby industries and workshops for understanding various sources of pollution.

j) Use video/animation films to explain various processes related to environment and sustainable development

k) Use different instructional strategies in classroom teaching.

l) Write the report on properties of various eco-friendly construction materials like Stone, aggregate of different sizes, timber, lime, bitumen, Bricks, tiles, precast concrete products, Water proofing material, Termite proofing material, Thermal insulating material, plaster of Paris, paints, distemper, and varnishes.

m) Display various technical brochures of recent projects/themes related to environment and sustainable development

n) Visit the Pollution control board office and its various projects to demonstrate the various practices adopted for control of Pollution

12.   SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project are group-based. However, in the fifth and sixth semesters, it should be preferably be ***individually*** undertaken to build up the skill and confidence in every student to become problem solver so that s/he contributes to the projects of the industry. In special situations where groups have to be formed for micro-projects, the number of students in the group should ***not exceed three.***

The micro-project could be industry application based, internet-based, workshop based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The total duration of the micro-project should not be less than ***16 (sixteen) student engagement hours*** during the course. The student ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This has to match the competency and the COs. Similar micro-projects could be added by the concerned course teacher:

a) **Natural cycles**: Build a Chart showing different natural cycles like Carbon, Nitrogen,Sulphur and phosphorus cycle.)

b) **Solar Energy:** Build a model of Solar water heater/Solar cooker

c) **Wind energy:** Build a model of wind mill

d) **Best out of waste**: Build useful items from waste materials like used plastic bottles, discarded pens etc.

e) Compare the pollution (water, air and noise) data of various cities with standard values as laid by pollution control board.

f) Surf different websites related environment and sustainable development, Pollution control.

g) Prepare energy audit report of any residential building.

h) Collect relevant information about the software used in pollution control.

o) Visit to ongoing project and study various aspects related to environment and sustainable development

13.   SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1	Renewable Energy Technologies: A Practical Guide for Beginners	Solanki, Chetan Singh	PHI Learning, New Delhi, 2010 Print Book ISBN: 9788120334342 eBook ISBN: 9789354437151
2	Ecology and Control of the Natural Environment	Izrael,Y.A.	Kluwer Academic Publisher eBook ISBN: 978-94-011-3390-6 Softcover ISBN: 978-94-010-5499-7
3	Green Technologies and Environmental Sustainability	Singh, Ritu, Kumar, Sanjeev	Springer International Publishing, 2017 eBook ISBN 978-3-319-50654-8
4	Environmental Noise Pollution and Its Control	G.R. Chhatwal, M. Satake, M.C. Mehra, Mohan Katyal, T. Katyal, T. Nagahiro	Anmol Publications, New Delhi ISBN: 8170411378 ISBN: 8170411378
5	Wind Power Plants and Project Development	Earnest, Joshua & Wizelius, Tore	PHI Learning, New Delhi, 2011 ISBN-10: 8120351274 ISBN-13: 978-8120351271
6	Renewable Energy Sources and Emerging Technologies	Kothari, D.P. Singal, K.C., Ranjan, Rakesh	PHI Learning, New Delhi, 2009 ISBN-13 - 978-8120344709
7	Environmental Studies	Anandita Basak	Pearson Publications ISBN 8131785688, 9788131785683 ISBN: 9788131721186, 8131721183
8	Environmental Science and Engineering	Aloka Debi	University Press ISBN: 9788173718113 ISBN-10: 8173716080 ISBN-13: 978-8173716089
9	Coping With Natural Hazards: Indian Context	K. S. Valadia	Orient Longman ISBN-10: 8125027351 ISBN-13: 978-8125027355
10	Introduction to Engineering and Environment	Edward S. Rubin	Mc Graw Hill Publications ISBN-10 : 0071181857 ISBN-13 : 978-0071181853

14.   SOFTWARE/LEARNING WEBSITES

a)   www.nptel.iitm.ac.in
b)   www.khanacademy
c)   http://www1.eere.energy.gov/wind/wind_animation.html
d)   http://www.nrel.gov/learning/re_solar.html
e)   http://www.nrel.gov/learning/re_biomass.html
f)   http://www.mnre.gov.in/schemes/grid-connected/biomass-powercogen/
g)   http://www.epa.gov/climatestudents/
h)   http://www.climatecentral.org
i)   http://www.envis.nic.in/
j)   https://www.overshootday.org/
k)   http://www.footprintcalculator.org/
l)   https://www.carbonfootprint.com/calculator.aspx

15.   PO-COMPETENCY-CO MAPPING

Semester II	Environment and Sustainability (Course Code: ....)								
	POs and PSOs								
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/ development of solutions	PO 4 Engineering Tools, Experimentation &Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Management	PO 7 Life-long learning	PSO 1 Environmental planning & deisgn	PSO 2 Execution & Maintenance
Competency - Adopt the sustainable practices to resolve the environment related issues									
a. Adopt relevant ecofriendly product in the given situation to protect ecosystem	2	1	1	-	2	1	1	2	2
b. use relevant method of pollution reduction in the given situation	2	2	1	1	2	-	2	2	2
c. Use of renewable resources of energy for sustainable development	2	2	2	1	2	2	1	2	2
d. Use the relevant techniques in given context to reduce impact due to climate change	2	2	2	1	2	1	2	2	2
e. Use relevant laws and policies for developing the sustainable environmental development	2	2	2	1	1	1	1	2	2

Legend: '**3**' for high, '**2**' for medium, **'1'** for low or **'-'** for the relevant correlation of each competency, CO, with PO/ PSO

16.   COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

S. No.	Name and Designation	Institute	Contact No.	Email
1	Dr. Jayesh Shah	Ass. Dean GTU, Pacific School of Engineering, Surat	9825436342	jayesh.shah.23021971 @gmail.com
2	Mrs. Jini Sunil	Shri K.J. Polytechnic, Bharuch	9601880636	jinivt@rediffmail.com

NITTTR Resource Persons

S. No	Name and Designation	Dept.	Contact No.	Email
1	Dr. V.D.Patil, Associate Professor, DCEEE	DCEEE	9422346736	vdpatil@nitttrbpl.ac.in
2	Prof. M.C.Paliwal, Associate Professor, DCEEE	DCEEE	9407271980	mcpaliwal@nitttrbpl.ac.in

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GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
I & II – Semester

Course Title: Sports and Yoga
(Course Code: 4300015)

Diploma programme in which this course is offered	Semester in which offered
Civil, Environment, Automobile, Fabrication, Marine, Mechanical, Electrical, Electronics and Communication, Metallurgy, Plastics, Bio Medical, Instrumentation and Control, Power Electronics, Computer, Information Technology, CACDDM, Ceramics, Printing, Textile Design, Textile Manufacturing, Textile Processing	First
Architectural Assistantship, Mining, Chemical, Mechatronics	Second

1.   RATIONALE

Physical activity is vital to the holistic development of students, fostering their physical, social and emotional health. Sports and Yoga are essential part of our life for good health and peace of mind. Yoga is considered itself as a sport which plays through your own physical ability. Yoga provides you all the benefits that you are willing to have from generic sports like badminton, football, cricket, etc. Yoga is the application of physical postures, control of breath, purification and relaxation of mind / body and spiritual principles aimed at bringing greater unity and balance to the mind and body. The use of breathing techniques known as *Pranayama* enables a person to focus on breath and helps to calm and still the mind and cultivate concentration ability. *Pranayama* can also help to energise and revitalize the body.

2.   COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- **Apply sports and yoga activities to keep the body physically and mentally fit.**

3.   COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with the identified competency are to be developed in the student for the following Course Outcomes (COs) achievement:

a) Practice physical activities and yoga for strength, flexibility and relaxation.
b) Use techniques for increasing concentration and decreasing anxiety for stronger academic performance.
c) Perform yoga exercises in various combination and forms.
d) Improve personal fitness through participation in sports and yoga activities.
e) Follow sound nutritional practices for maintaining good health and physical performance.

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P/2)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	CA	ESE	CA	ESE	
0	0	2	0	0	0	50	0	50

This is designed to facilitate attainment of COs holistically, as there is no examination.

Legends: L-*Lecture;* **T** – *Tutorial/Teacher Guided Theory Practice;* **P** -*Practical;* **C** – *Credit,* **CA** - *Continuous Assessment;* **ESE** -*End Semester Examination.*

5.   SUGGESTED PRACTICAL EXERCISES

The following practical outcomes (PrOs) are the sub-components of the COs. *Some of the PrOs marked '*' are compulsory, as they are crucial for that particular CO at the 'Precision Level' of Dave's Taxonomy related to 'Psychomotor Domain'.*

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1.	Perform following Yoga Asanas under the guidance of yoga trainer :- • Surya Namaskar (Sun Salutation) • Tadasana (Mountain pose) • Vrikshasana (Tree pose) • Vajrasan (Hand under foot pose) • Pada-hastasana (Hand under foot pose) • Ushtrasana (Camel pose) • Dhanurashana.(Bow Pose) • Bhjangasana (Snake pose) • Halasana (Plough pose) • Shavasana/Yoga Nidra • Bhastrikai Pranayam • Kapalbhati Pranayam • Anulom Vilom Pranayam • Bhramari Pranayam	III	12*
2.	Participate in any sports activities of your choice : • Indoor sports/games (Badminton, Chess, Carrom, Table Tennis) • Outdoor sports/games (Cricket, Kabaddi, , Volley ball, Basketball, Football, Hockey)	IV	14
3.	Prepare report on any sports events including associated rules, playground specification, rules for judgement, etc.)	IV	02*
	Total		**28**

Note

i. *More* **Practical Exercises** *can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.*

ii. The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency.

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
	-Not applicable-	Nil

6.   MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

The major equipment with broad specifications for the PrOs is a guide to procure them by the administrators to usher in uniformity of practicals in all institutions across the state.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1	Yoga Mats/ Blankets Straps Blocks Bolsters Chairs Meditation cushions Eye pillows (tissues or washable cloth to cover them) Mat cleaning wipes Strong floorings Temperature control, fans, portable heaters (if needed) Chime, bells, or gong (for bringing people out of corpse pose, or silent meditation) Essential oil diffuser Yoga CD's CD player Lighting system that allows for dimming Effective sound system Salt lamp – they purify air and look lovely Sandbags	1
2	Sports and games accessories as per the decision of college.	2

7.   AFFECTIVE DOMAIN OUTCOMES

The following **sample** Affective Domain Outcomes (ADOs) are embedded in many of the above-mentioned COs and PrOs. More could be added to fulfill the development of this course competency.

   a) Follow safe practices.
   b) Practice good housekeeping.
   c) Demonstrate working as a leader/a team member.
   d) Maintain tools/accessories/ equipment.
   e) Follow ethical practices.

The ADOs are best developed through the laboratory/field-based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:

i.   'Valuing Level' in 1st year
ii. 'Organization Level' in 2nd year.
iii. 'Characterization Level' in 3rd year.

8.   UNDERPINNING THEORY

The major underpinning theory is given below based on the higher level UOs of *Revised Bloom's taxonomy* that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit – I **Introduction to Physical fitness**	1a. Explain importance of physical education. 1b. Describe importance of Physical Fitness & Wellness 1c. Explain the components of physical fitness. 1d. Demonstrate healthy life style. 1e. Prevent health threats by changing life style.	1.1 Aims & Objectives of Physical Education 1.2 Changing trends in Physical Education 1.3 Meaning & Importance of Physical Fitness & Wellness 1.4 Components of Physical fitness 1.5 Components of health related fitness 1.6 Components of wellness 1.7 Preventing health threats through lifestyle change 1.8 Concept of positive lifestyle
Unit – II **Fundamentals of Anatomy & Physiology in sports & yoga**	2a. Explain importance of anatomy and physiology. 2b. Describe effects of exercise in various body systems. 2c. Describe concept of correct posture. 2e. Explain corrective measures for posture deformities.	2.1 Anatomy, physiology and its importance. 2.2 Effect of exercise on various body system i.e. circulatory system, respiratory system, neuro- muscular system 2.3 Concept and advantages of correct posture. 2.4 Posture deformities and corrective measures.
Unit– III **Yoga & Pranayama**	3.1 Explain importance of yoga. 3.2 Perform various pranayama for increasing concentration. 3.3 Use meditation and other relaxation techniques for improving concentration.	3.1 Meaning & Importance of Yoga Asanas, Pranayama & Meditation 3.2 Yoga & related Asanas - Sukhasana, Tadasana, Padmasana & Shashankasana 3.3 Relaxation techniques for improving concentration - Yog-Nidra

Unit– IV Sports/ games	4.1 Describe various warming exercises. 4.2 Select any game/sports of your choice. 4.3 Explain latest rules of any game/sports. 4.4 Describe specifications of play fields and related sports equipment.	4.1 Warming up and limbering down exercises 4.2 Tournaments- Knock out, League/ Round Robin & combination 4.3 Following sub topics related to any one Game/Sport of choice of student out of: Badminton, Chess, Carrom, Table Tennis, Cricket, Kabaddi, , Volley ball, Basketball, Football, Hockey, etc. 4.4 History of the Game/Sport. 4.5 Latest General Rules of the Game/Sport. 4.6 Specifications of Play Fields and Related Sports Equipment. 4.7 Effect of anxiety & fear on sports performance.

9. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching/ Practical Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Introduction to Physical fitness					
II	Fundamentals of Anatomy & Physiology in sports & yoga	**- Not Applicable -**				
III	Yoga & Pranayama					
IV	Sports/games					
Total						

Legends: R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)

10. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

a) Prepare a list of specifications for various tools/equipment/machines used in gymnasium/indoor sports complex.
b) Undertake a market survey of local dealers for procurement of sports items/ equipment/machines.
c) Visit the sports shop and collect all relevant information about any sport item and submit the detailed report.
d) Download video clips showing correct practices for yogasanas, pranayam and any sports/games.
e) Prepare a chart showing different types of yogasanas.
f) Prepare a chart showing different types of pranayams.

g) Prepare a chart showing the field details of any sports/games.

11.   SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a) Massive open online courses (**MOOCs**) may be used to teach various topics/sub topics.

b) About **20% of the topics/sub-topics** which are relatively simpler or descriptive in nature is to be given to the students for **self-learning**, but to be assessed using different assessment methods.

c) With respect to **section No.10**, teachers need to ensure to create opportunities and provisions for **co-curricular activities**.

f) Arrange visit to nearby yoga centre and sports complex and use of videos/animations for understanding various steps , processes related to the activities .

12.   SUGGESTED MICRO-PROJECTS

- Not Applicable -

13.   SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1	Modern Trends and Physical Education class 11 & class 12	Ajmer Singh	Kalyani Publication, New Delhi ISBN : 9789327264319
2	Light on Yoga	B.K.S. Iyengar	Thomson's Publication, New Delhi ISBN: 8172235011
3	Health and Physical Education	V.K.Sharma	NCERT Books; Class11,12 Saraswati House Publication, New Delhi
4.	Yoga and Stress Management	Acharya Yatendra	Fingerprint Publishing ISBN: 938905303X
5.	Patanjali Yoga Sutras	Swami Vivekanand	Fingerprint Publishing ISBN: 9389567351
6.	Pranayam Rahasya	Ramdev	Patanjali-Divya Prakashan,Haridwar ISBN: 978-8189235017
7.	Yoga its Philosophy & Practice	Ramdev	Divya Prakashan, Haridwar

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14.   SOFTWARE/LEARNING WEBSITES

- https://youtu.be/dAqQqmaI9vY
- https://youtu.be/c8hjhRqIwHE
- https://youtu.be/MrR04m1zoJ8
- https://youtu.be/P-jwGj7YqNM

- https://youtu.be/3p4r_ad2Y7g
- https://youtu.be/mndOIVCwFss
- https://youtu.be/J68MR3dBzto

15.   PO-COMPETENCY-CO MAPPING

Semester-I & II	Sports & Yoga (Course Code: 4300015)						
	POs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/ develop-ment of solutions	PO 4 Engineering Tools, Experimen-tation &Testing	PO 5 Engineering practices for society, sustain-ability & environ-ment	PO 6 Project Manage-ment	PO 7 Life-long learning
Competency	Apply sports and yoga activities to keep the body physically and mentally fit.						
Course Outcomes CO a) Practice Physical activities and yoga for strength, flexibility, and relaxation.	2	-	-	-	1	-	2
CO b) Use techniques for increasing concentration and decreasing anxiety for stronger academic performance.	3	-	-	-	1	-	2
CO c) Perform yoga exercises in various combination and forms.	2	-	-	-	1	-	2
CO d) Improve personal fitness through participation in sports and yoga activities.	2	-	-	-	1	-	2
CO e) Follow sound nutritional practices for maintaining good health and physical performance.	3	-	-	-	1	-	2

Legend: '3' for high, '2' for medium, '1' for low and '-' for no correlation of each CO with PO.

16.   COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

S. No.	Name and Designation	Institute	Contact No.	Email
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NITTTR Resource Persons

S. No.	Name and Designation	Department	Contact No.	Email
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2.	Dr. K.K. Jain, Professor	Mech. Engg. Education	9425017472	kkjain@nitttrbpl.ac.in

GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
Semester - I

Course Title: Fundamentals of Electricals and Electronics
(Course Code: 4300018)

Diploma Programme in which this course is offered	Semester in which offered
Computer	First Semester

1. RATIONALE

The engineering technologists (i.e. engineering diploma holders) have to use/maintain various types of equipment which are electronically operated and controlled. For using/maintaining such equipment, the fundamental principles of electronics and electrical are to be applied in many situations to arrive at the probable solutions to many of the broadly defined problems which they will face during their career as technologists. Therefore, the knowledge about the functions of various basic electronics devices and the associated circuits including the associated practical skills acquired through the laboratory will help the student when s/he will be working with electronically controlled/operated equipment or electronic circuits. This course is therefore so designed that the students will be able to use/apply the principles of basic electronics as well as electrical as and when required.

2. COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:
- **Apply principles of basic electrical and electronics in various engineering applications .**

3. COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:

 a. Differentiate active and passive components and test them.
 b. Identify various types of diodes and their applications.
 c. Apply transistors in electronics circuits.
 d. Demonstrate various electronic hardware components like PCB, ICs, cables and connectors.
 e. Dispose electronic waste safely.

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (CI+T/2+P/2)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
CI	T	P	C	CA	ESE	CA	ESE	
3	0	2	4	30*	70	25	25	150

(*): Out of 30 marks under the theory CA, 10 marks are for assessment of the micro-project to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for the assessing the attainment of the cognitive domain UOs required for the attainment of the COs.

Legends: CI-Class Room Instructions; **T** – Tutorial/Teacher Guided Theory Practice; **P** -Practical; **C** – Credit, **CA** - Continuous Assessment; **ESE** -End Semester Examination.

5.   COURSE MAP (with sample COs, PrOs, UOs, ADOs and topics)
This course map provides the student an overview of the flow and linkages of the various types of learning outcomes to be attained by the student in all domains of learning leading to the industry identified competency depicted at the centre of this map.

6.   SUGGESTED PRACTICAL EXERCISES
The following practical outcomes (PrOs) that are the subcomponents of the COs. Some of the PrOs marked '*' are compulsory, as they are crucial for that particular CO. These PrOs need to be attained at least at the 'Precision Level' of Dave's Taxonomy related to 'Psychomotor Domain'.

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1.	Study of various analog electronics Terminology and symbols	I	04
2.	To Study and Verify Ohm's Law	I	02
3.	Calculate resultant resistor value for series And parallel connection of resistors.	I	04
4.	Test VI characteristic of PN junction diode.	II	02
5.	Study Zener voltage regulator for the Given voltage.	II	02

6.	Build/test half wave rectifier.	II	02
7.	Build/test full wave rectifier using two diodes.	II	02
8.	Build/test full wave bridge rectifier using Four diodes.	II	02
9.	Test I/O Characteristics for CE Configuration	III	02
10.	Identify and study different types of cables.	IV	02
11.	Identify and study different types of connectors.	IV	02
12.	Demonstrate various methods of handling Electronic waste.	V	02
	Total		**28**

Note

i. More Practical Exercises can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.

ii. The following are some sample 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed Practical Exercises of this course required which are embedded in the COs and ultimately the competency.

Sr. No.	Sample Performance Indicators for the PrOs	Weightage in %
1	Prepare of experimental setup	20
2	Operate the equipment setup or circuit	20
3	Follow safe practices measures	10
4	Record observations correctly	20
5	Interpret the result and conclude	30
	Total	**100**

7. MAJOR EQUIPMENT/ INSTRUMENTS AND SOFTWARE REQUIRED

These major equipment/instruments and Software required to develop PrOs are given below with broad specifications to facilitate procurement of them by the administrators/management of the institutes. This will ensure conduction of practical in all institutions across the state in proper way so that the desired skills are developed in students.

Sr.	Equipment Name with Broad Specifications	PrO.

No.		No.
1.	Variable DC power supply 0- 30V, 2A, SC protection, display for voltage and current.	2-7
2.	Cathode Ray Oscilloscope Dual Trace 20Mhz, 1MegaΩ Input Impedance	2-7, 8-10
3.	Function Generator 0-2 MHz with Sine, square and triangular output with variable frequency and amplitude.	2-7, 8-10
4.	Digital Multimeter : 3 1/2 digit display, 9999 counts digital multimeter measures: V_{ac}, V_{dc} (1000V max) , A_{dc}, A_{ac} (10 amp max) , Resistance (0 - 100 MΛ) , Capacitance and Temperature measurement	All
5.	Electronic Workbench : Bread Board 840 -1000 contact points : Positive and Negative power rails on opposite sides of the board , 0-30 V , 2 Amp Variable DC power supply, Function Generator 0-2MHz, CRO 0-30MHz , Digital Multimeter.	All

8.   AFFECTIVE DOMAIN OUTCOMES
The following sample Affective Domain Outcomes (ADOs) are embedded in many of the above mentioned COs and PrOs. More could be added to fulfil the development of this competency.
a.   Work as a leader/a team member.
b.   Follow ethical practices.
c.   Practice environmental friendly methods and processes. (Environment related)

The ADOs are best developed through the laboratory/field based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:
   i.   'Valuing Level' in 1st year
  ii.   'Organization Level' in 2nd year.
 iii.   'Characterization Level' in 3rd year.

9.   UNDERPINNING THEORY
The major Underpinning Theory is formulated as given below and only higher level UOs of Revised Bloom's taxonomy are mentioned for development of the COs and competency in the students by the teachers. (Higher level UOs automatically include lower level UOs in them). If required, more such higher level UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at Application level)	Topics and Sub-topics
Unit-I **Basic of Electrical Engineering**	a. Explain Electric current and voltage. b. Explain Electrical circuits and elements: Resistor, inductor, capacitor. c. Calculate Voltage and current using Kirchoffs' laws d. Differentiate active and passive components. e. Differentiate between various types of signals and signal parameters	1. Definition of current and voltage, units of current and voltage, Ohm's law, symbol and relation. 2. Characteristics of electrical circuit, resistor in series and parallel, inductor, capacitor 3. Kirchoffs' current and voltage law 4. Active components(Voltage source and current source), Passive components(Resistor, inductor, capacitor.) 5. Sinusoidal Signal, Triangular wave, square wave, sawtooth wave, amplitude, frequency, wave length, time period.
Unit – II **Diode theory and Rectifiers**	2a. Explain atomic structure and conductivity 2b. Explain diode theory 2c. Distinguish various diodes 2d. Designing various rectifier circuits. 2e. Justify the application of Diode.	1. Structure of atom, valence electron, conductor, semiconductor, insulator 2. Doping, Intrinsic semiconductor, extrinsic semiconductor, P-type and N-type semiconductor, majority charge carrier, minority charge carrier, P-N junction, Depletion layer, knee voltage, forward bias, reverse bias 3. Special diodes: LED, Photodiode,zener diode, tunnel diode, LASER diode and Power diode 4. Types of Rectifiers: Half Wave, Full Wave Rectifier (bridge and center tapped): circuit operation I/O waveforms for voltage and current 5. Zener diode as a voltage regulator

Unit – III Transistors	a. Distinguish the specification of the given type of transistors b. Differentiate the performance of the specified transistor with sketches. c. Interpret with sketches the performance of the CE Configuration. d. Justify the application of the transistor circuit.	1. Types of transistors: PNP, NPN 2. Working of transistors. 3. Transistor configurations(CE): circuit diagram, input and output characteristics. Different points of characteristics (Cut-off, Active and Saturation), input resistance, output resistance, current gain. 4. Transistor as a switch.
Unit– IV Electronic Hardware	a. Identify ICs b. Explain PCB types and manufacturing c. Introduce Electronic components manufacturing Hierarchy d. Explain logic families e. Identify different types of Cables and connectors	1. Definition, construction, types, example. 2. PCB layout, types, single layer, multi layer, manufacturing of PCB 3. SSI, MSI, LSI, VLSI (Introduction to various technology) 4. RTL, DTL, TTL, CMOS, Fan in, Fan out(Building components, No. of gates supported) 5. Twisted pair, Coaxial cable, fibre optic cable, RJ45 connector, BNC.
Unit– V Handling Electronic Waste	a. Justify the need of understanding electronic waste b. Establish the relationship of sustainability and electronic waste. c. Suggest methods of handling electronic waste with examples. d. Suggest methods to dispose electronic waste	1. Concept of electronic waste. 2. Sustainability and electronic waste 3. Methods to handle electronic waste 4. Disposal of electronic waste

Note: *The UOs need to be formulated at the 'Application Level' and above of Revised Bloom's Taxonomy' to accelerate the attainment of the COs and the competency.*

10. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
1	Basic of Electrical Engineering	08	4	7	7	18
2	Diode theory and rectifiers	10	5	7	8	20

3	Transistors	12	4	6	5	15
4	Electronic Hardware	08	2	5	5	12
5	Handling Electronic Waste	04	1	2	2	5
	Total	**42**	**16**	**27**	**27**	**70**

Legends: **R**=Remember, **U**=Understand, **A**=Apply and above (Revised Bloom's taxonomy)

Note: This specification table provides general guidelines to assist students for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may vary from above table.

11. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related **co-curricular activities** which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should conduct following activities in groups and prepare small reports (of 1 to 5 pages for each activity). For micro project reports should be as per suggested format, for other activities students and teachers together can decide the format of the report. Students should also collect/record physical evidences such as photographs/videos of the activities for their (student's) portfolio which will be useful for their placement interviews:

a.   Prepare charts/display boards of some electronic devices with their specification.
b.   Undertake mini/micro-projects in teams/individual basis
c.   Give seminar on any relevant topic.
d.   Undertake a market survey of various types of hardware components.
e.   Prepare showcase portfolios.

12. SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)
These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a.   Massive open online courses (MOOCs) may be used to teach various topics/sub topics.
b.   Guide student(s) in undertaking micro-projects.
c.   'CI" in section No. 4means different types of teaching methods that are to be employed by teachers to develop the outcomes.
d.   About 20% of the topics/sub-topics which are relatively simpler or descriptive in nature is to be given to the students for self-learning, but to be assessed using different assessment methods.
e.   With respect to section No.11, teachers need to ensure to create opportunities and provisions for co-curricular activities.
f.   Guide students on how to address issues on environment and sustainability using the knowledge of this course
g.   Guide students for using data manuals.

13. SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project are group-based (group of 3 to 5). However, in the fifth and sixth semesters, the number of students in the group should not exceed three.

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain a dated work diary consisting of individual contributions in the project work and give a seminar presentation of it before submission. The total work load on each student due to   the micro-project should be about **16 (sixteen)** student engagement hours (i.e. about one hour per week) during the course. The students ought to submit micro-project by the end of the semester (so that they develop the industry oriented COs).

A suggestive list of micro-projects is given here. This should relate highly with competency of the course and the COs. Similar micro-projects could be added by the concerned course teacher:

- Using various fundamental knowledge of electrical and electronics engineering students may develop mini/micro projects based on team/individual basis which concrete their fundamentals of electronics hardware and can work as prototypic models in various societal applications.

   a. **Electronic waste**: Compile a report of handling electronic waste with figures, tables and comparative charts and strategies used and suggested

14. SUGGESTED LEARNING RESOURCES

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
	Electronic Devices and Circuit: An Introduction	Mottershead, Allen	Goodyear Publishing Co. ,New Delhi, ISBN : 9780876202654
	Principles of Electronics	V. K. Mehta (Text book)	S. Chand
	Electronic Principles	A .P. Malvino(Text book)	TMH Edition
	The Art of Electronics	Horowitz, Paul; Hill, Winfield	Cambridge University Press, New Delhi 2015 ISBN : 9780521689175
	Basic Electronic Engineering	Baru, V.; Kaduskar, R.; Gaikwad S.T.	Dreamtech Press, New Delhi,2015 ISBN: 9789350040126
6.	Fundamentals of Electronic Devices and Circuits	Bell, David	Oxford University Press New Delhi, 2015, ISBN : 9780195425239
7.	Electronic Devices and Circuit	Maini, Anil K.	Wiley India, New Delhi, ISBN : 9788126518951
8.	Transistor Selector Handbook	-	Tower's International Foulsham, London, 1974, ISBN: 9780572008888

15. SUGGESTED LEARNING WEBSITES

a.   www.datasheetcafe.com
b.   www.williamson-labs.com
c.   www.learnerstv.com
d.   www.cadsoft.io
e.   www.nptel.iitm.ac.in
f.   www.khanacademy
g.   www.vlab.co.in

16. PO-COMPETENCY-CO MAPPING

Semester II	Basic Electronics (Course Code: …………………)									
	POs and PSOs									
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design / development of solutions	PO 4 Engineering Tools, Experimentation & Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Management	PO 7 Life-long learning	PSO 1	PSO 2	PSO 3 (If needed)
Competency *Apply principles of basic electrical and electronics in various engineering applications*										
Course Outcomes CO1 Differentiate active and passive components and test them	2	1	2	2	1					
CO 2 Identify various types of diodes and their applications	2	2	1	1	1	1				

CO 3 Apply transistors in electronics circuits	1	2	1	1	1	1			
CO 4 Demonstrate various electronic hardware components like PCB, ICs, cables and connectors	2	1	1	2	1	2			
CO 5. Dispose electronic waste safely	1	1	1	1	2	1			

Legend: '3' for high, '2' for medium, '1' for low or '-' for the relevant correlation of each competency, CO, with PO/ PSO

17.   COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

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NITTTR Resource Persons

Sr. No.	Name and Designation	Department	Contact No.	Email

GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)
Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
I – Semester

Course Title: **Basic Computer Programming**
(Course Code: 4310702)

Diploma programme in which this course is offered	Semester in which offered
Computer Engineering	First

1.   RATIONALE

The present era can be said a digital era. Nowadays almost in every walk of life there is application of digitization, atomization as well as connecting various gadgets, home appliances, human body etc. to each other. The core component which drives these tasks is a piece of code for the machine, known as a program. It is essential for the students to learn basic concepts and methodology to develop computer programs.

This first and introductory level Computer Programming Course is intended to develop logical thinking skills and programs using a popular structured programming language `C'. The programming skills thus acquired can be used for developing programs for the scientific, research and business purposes.

2.   COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences.
.
- **Develop structured, modular and memory efficient programs in 'C'.**

3.   COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:

   a.   Design algorithm and flowchart for the given Problem.

   b.   Develop C programs using control structures.

   c.   Develop C programs using arrays and pointers.

   d.   Implement user defined functions.

   e.   Use structure and union in C programs.

   f.   Implement file and I/O operations in C.

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (CI+T/2+P/2)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	CA	ESE	CA	ESE	
3	0	4	5	30*	70	25	25	150

(*): Out of 30 marks under the theory CA, 10 marks are for assessment of the micro-project to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for assessing the attainment of the cognitive domain UOs required for the attainment of the COs.

Legends: L-Lecture; T – Tutorial/Teacher Guided Theory Practice; P - Practical; C – Credit, CA - Continuous Assessment; ESE - End Semester Examination.

5.   SUGGESTED PRACTICAL EXERCISES
The following practical outcomes (PrOs) are the sub-components of the COs. *These PrOs need to be attained to achieve the Cos.*

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Practice using Visual Programming Language like scratch	I	02
2	Design and test sample C programs to display a message on screen.	II	01
3	Design and test minimum 3 C programs using constants, variables and datatypes.	II	02
4	Design and test a C program to swap 2 numbers using a third variable and without using a third variable.	II	01
5	Design and test a C program to compute volume and surface area of a sphere.	II	01
6	Design and test a C program to convert temperature in Fahrenheit to Celsius and vice versa.	II	01
7	Design and test at least 4 C programs to using enlisted operators: (1) Assignment (2) Arithmetic (3) Relational (4) Logical	II	02
8	Design and test at least 5 C programs using the enlisted operators: (1) Bitwise (2) Increment and Decrement (3) Conditional (4) Comma (5) size of	II	02
9	Design and test at least 3 C programs to test the operator precedence and their associativity, implicit and explicit type conversion.	II	02
10	Design and test at least 3 C programs to show formatted and unformatted input and output.	II	02
11	Design and test at least 2 C programs using decision making statements: (1) Simple if (2) if…else (3) Nested if (4) if…else ladder (5) switch (6) goto	III	03
12	Design and test at least 3 C programs using the for loop.	III	02

13	Design and test at least 3 C programs using the while loop.	III	02
14	Design and test at least 3 C programs using do…while loop.	III	02
15	Design and test a C program using break and continue statements.	III	01
16	Design and test at least 5 pattern programs using loop structures.	III	03
17	Design and test at least 5 C programs using one dimensional array.	IV	02
18	Design and test at least 3 C programs using two dimensional arrays.	IV	02
19	Design and test at least 3 C programs using strings.	IV	02
20	Design and test at least 3 C programs using pointers.	IV	02
21	Design and test a C program using the concept of pointer to pointer.	IV	01
22	Design and test at least 5 C programs using user defined functions.	V	04
23	Design and test at least 3 C programs by applying the recursion concept.	V	02
24	Design and test a C program to test various inbuilt string functions.	V	02
25	Design and test a C program to demonstrate various inbuilt math functions.	V	02
26	Design and test a C program to demonstrate storage classes.	V	02
27	Design and test a C program to demonstrate usage of enum and typedef.	VI	02
28	Design and test at least 3 C programs on structures and unions.	VI	02
29	Design and test at least 2 C programs using file operations.	VI	02
	Total		**56**

Note

 i. More **Practical Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list*.*
ii. The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency..

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
1	Correctness of algorithm/program	30
2	Readability and documentation of the program/Quality of input and output displayed (messaging and formatting)	10
3	Code efficiency	20
4	Debugging ability	20
5	Program execution/answer to sample questions	20
	Total	**100**

6.   MAJOR EQUIPMENT/ INSTRUMENTS AND SOFTWARE REQUIRED

These major equipment with broad specifications for the PrOs is a guide to procure them by the administrators to usher in uniformity of practical in all institutions across the state.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1	Computer with basic configuration with windows or unix os	All
2	C Compiler	All

7.   AFFECTIVE DOMAIN OUTCOMES

The following *sample* Affective Domain Outcomes (ADOs) are embedded in many of the above mentioned COs and PrOs. More could be added to fulfil the development of this course competency.
   a) Follow safety practices.
   b) Practice good housekeeping.
   c) Demonstrate working as a leader/a team member.
   d) Maintain tools and equipment
   e) Follow ethical practices.

The ADOs are best developed through the laboratory/field based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:
   i.   'Valuing Level' in 1st year
   ii.   'Organization Level' in 2nd year.
   iii. 'Characterization Level' in 3rd year.

8.   UNDERPINNING THEORY

The major underpinning theory is given below based on the higher level UOs of *Revised Bloom's taxonomy* that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit – I: **Flowchart and Algorithm**	1a. Write pseudo code for the given problem statements 1b. Select appropriate flowchart symbols to represent problem solution graphically 1c. Write algorithms for the given problem statements. 1d. Develop flowchart for the given problem statement 1e. Develop Algorithm for the given problem statement	**Flowchart** 1.1 Definition and Importance of flowchart 1.2 Symbols of flowchart 1.3 Flow lines, Terminals, Input/Output, Processing Decision, Connection off-page connectors 1.4 Guidelines for preparing Flowchart 1.5 Flowchart structure: Sequence, selection, repetition 1.6 Limitation of flowchart **Algorithm** 1.7 Developing and writing algorithm using pseudo codes

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit– II: **Basics of 'C'**	2a. Comprehend general structure of 'C' program 2b. Choose appropriate operators amongst C operators to form expressions in C. 2c. Write simple C programs using arithmetic expressions 2d. Apply different format strings for the input and output using 'C' statements.	**Basics of 'C'** 2.1 General structure of 'C' program and standard directories 2.2 Write, compile, execute a simple 'C' program 2.3 Character set, 'C' tokens 2.4 Keywords and Identifiers 2.5 Data Types in 'C' 2.6 Variables and rules for defining variables, Declaration and Initialization of variables 2.7 Dynamic initialization 2.8 Constant and volatile variable 2.9 Introduction of different types of operators and their symbolic representation, Assignment, Arithmetic, Relational, Logical, Bitwise, Increment and Decrement, Conditional, Comma, size of Operators 2.10 Operator precedence and their associativity 2.11 Evaluation of Expressions 2.12 Type Conversion-Implicit and Explicit 2.13 Input and Output statements in 'C' 2.14 Formatted input and output in 'C'
Unit– III: **Decision Statements and Control Structure**	3a. Develop programs using decision making if-else statement 3b. Develop programs using decision making switch – case statement 3c. Develop programs using unconditional branching goto statements in 'C' language. 3d. Develop C programs using control structure: for, While and Do-While 3e. Apply Break and Continue Statement based on the problem statements in 'C' language.	**Decision Statements** 3.1 Conditional branching statements: Simple if statement 3.2 If-else statement 3.3 Nested If-else statement 3.4 If-else-if Ladder statement 3.5 switch statements 3.6 Unconditional branching statement: goto **Control Statements** 3.7 for loop 3.8 While loop 3.9 Do-while loop 3.10 Nested for loop 3.11 Break and continue statements
Unit–IV:	4a. Develop programs using	**Array**

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Array and Pointers	one dimensional arrays in 'C' language. 4b. Write programs using two dimensional arrays 4c. Write programs to demonstrate the use of pointers in C programs. 4d. Write simple programs to demonstrate use of strings	4.1 Introduction to an Array 4.2 A characteristics of an array 4.3 One dimensional array: Declaration, initialization and accessing 4.4 Two-dimensional array: Declaration, initialization and accessing 4.5 Introduction to a String: Declaration and Initialization of String, gets() and puts() **Pointer** 4.6 Introduction to Pointers 4.7 Characteristics of Pointers 4.8 Address of Operator and Indirection operator 4.9 Declaration and initialization of Pointers 4.10 Types of Pointers: void and null 4.11 Pointers to Pointers
Unit–V: **Functions**	5a. Write a simple c program to declare, define and call a function. 5b. Write C programs using function with arguments 5c. Write C functions using call by value and call by reference. 5d. Write C programs using recursive functions. 5e. Use built-in functions of math and string library	5.1 Introduction to Functions 5.2 Types of Functions: Built-in and user defined Functions 5.4 Advantages of using Functions 5.5 Working of a Function 5.6 Declaring, Defining and calling user defined Functions 5.7 Categories of user-defined Functions 5.8 Call by Value and call by Reference 5.10 Recursion 5.11 Built-in Functions: String and Maths 5.12 Storage Classes: -auto, static, register and extern
Unit– VI: **Structure, Union and Files**	6a. Write a simple C program to define, declare and access user defined Structure 6b. Write a simple C program to define, declare and access user defined union 6c. Develop a program to read from and write into files using 'C' language 6d. Write a simple program to demonstrate use of "Array of structures"	**Structure** 6.1 User-defined Data types: enum, typedef 6.2 Introduction to Structures 6.3 Declaration, Initialization and accessing of Structures 6.4 Array of structures **Union** 6.5 Introduction to Union 6.6 Declaration, Initialization and accessing of Union **Files** 6.7 Introduction to text Files 6.8 Opening & Closing Files in text mode

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
		6.9 Reading From and writing into Files in text mode only

Note: *The Unit Outcomes (UOs) need to be formulated at the 'Application Level' and above of Revised Bloom's Taxonomy' to accelerate the attainment of the COs and the competency.*

9. SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Flowchart and Algorithm	4	2	2	4	8
II	Basics of 'C'	6	2	6	2	10
III	Decision Statements and Loop Control Statements	10	2	6	10	18
IV	Array and Pointers	8	2	5	4	11
V	Functions	8	2	5	6	13
VI	Structure, Union and Files	6	2	4	4	10
	Total	**42**	**12**	**28**	**30**	**70**

Legends: R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)

<u>*Note*</u>: *This specification table provides general guidelines to assist students for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions to assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may slightly vary from above table.*

10. SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

a) Design algorithm and construct a flowchart for at least 6 problems
b) Students are encouraged to learn Visual Language programming like scratch, snap etc.
c) Undertake micro-projects in teams.
d) Prepare charts to explain use/process of the identified topic.
e) https://www.codechef.com/ , in this website very elementary programs are available, students are expected to solve those programs
f) https://code.org/, an hour of coding event may be organized and students are encouraged to participate.
g) Students are encouraged to register themselves in various MOOCs such as: Swayam, edx, Coursera, Udemy etc to further enhance their learning.
h) Encourage students to participate in different coding competitions like hackathon, online competitions on codechef etc.
i) Encourage students to form a coding club at institute level.

11.   SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a)   Massive open online courses (*MOOCs*) may be used to teach various topics/sub topics.

b)   Guide student(s) to take micro-projects.

c)   Blend the basic concepts with more specialized instruction

d)   Visualization, Cooperative Learning, inquiry based instruction, differentiation, effective use of technology, think-pair and share etc pedagogies can be implemented as per the enlisted course outcomes.

e)   Give at least 10 competitive problems for each course outcomes of this course

f)   Practice, practice and practice - expose students to wide range of problems

g)   About *20% of the topics/sub-topics* which are relatively simpler or descriptive in nature is to be given to the students for *self-learning*, but to be assessed using different assessment methods.

h)   With respect to *section No.10*, teachers need to ensure to create opportunities and provisions for *co-curricular activities*.

i)   Guide students on how to address issues on environment and sustainability using the knowledge of this course

12.   SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project are group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of students in the group should *not exceed three.*

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The duration of the microproject should be about **14-16 *(fourteen to sixteen) student engagement hours*** during the course. The students ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This has to match the competency and the COs. Similar micro-projects could be added by the concerned course teacher:

Suggested List of Micro-Project Definition

1.   Develop a C program to represent a bank account. Create a structure Customer having fields name of the depositor, account number, type of account and balance amount in the account. Perform different operations: (1) To assign initial values (2) To deposit an amount (3) To withdraw an amount after checking the balance (4) To display name and balance. Write a menu driven program to handle N number of customers.

2.   Develop a menu driven C program to perform basic arithmetic operations/mathematical operations like calculators on user inputted data.

3.   Develop a C program to generate results for students. Admin enters component wise marks for each subject. After entering the marks, students will know his/her SPI as well as total backlogs.

4. Develop a C program to display a minimum number of currency notes required based on the entered amount. Output will also display the total number of notes required for each currency note. Valid currency notes are 1, 2, 5, 10, 20, 50, 100, 200, 500, 2000. E.g. if the user enters 140 then the output will be "3 currency notes are required. 1*100 + 2*20 = 140".

5. Develop a C program that allows the names of 1000 candidates in a local election and the number of votes received by each candidate. The program should then output each candidate's name, the number of votes received, and the percentage of the total votes received by the candidate. Your program should also display the winner of the election.

6. Develop a C program to find and replace all occurrences of a word in file. For example : Suppose file contains : "I like programming. I am learning programming and programming with files is fun. Learning programming is simple and easy." Find occurrences of "programming" and replace it with "C language".

13.   SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1	Programming with ANSI and Turbo C	Ashok N. Kamthane	Pearson Education, New Delhi; 2008; ISBN: 978-8131704370
2	Programming in ANSI C	E. Balagurusamy	McGraw Hills Education, New Delhi; 2019; ISBN: 978-9351343202
3	Let us 'C'	Yashavant Kanetkar	BPB Publication, New Delhi; 2020; ISBN: 978-9389845686
4	Introduction to C Programming	Reema Thareja	Oxford University Press, New Delhi; 2018; ISBN: 978-0199492282

14.   SUGGESTED LEARNING WEBSITES

a) https://snap.berkeley.edu/snap/snap.html

b) https://scratch.mit.edu/download/scratch2

c) http://nptel.ac.in/courses/! 06105085/4

d) www.w3schools com

e) wvvw. program iz. com/c-programming

f) https://www codecademy.com/courses/getting-started-v2/0/l

g) http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-087-practical-programming-in-c-january-iap-2010/

http://spoken-tutorial org/

15.   PO-COMPETENCY-CO MAPPING

Semester I	Computer Programming (Course Code: 4310702)						
	POs						
Competency & Course Outcomes	**PO 1** Basic & Discipline specific knowledge	**PO 2** Problem Analysis	**PO 3** Design/ develop-ment of solutions	**PO 4** Engineering Tools, Experimen-tation &Testing	**PO 5** Engineering practices for society, sustainability & environment	**PO 6** Project Manage-ment	**PO 7** Life-long learning
Competency *Develop structured, modular and memory efficient programs in 'C'.*							
Course Outcomes CO a) Design flowchart and algorithm for given programming statement.	2	2	2	-	2	2	2
CO b) Develop, Debug basic C programs, different operators, decision making controls and iterative statements.	2	3	3	2	2	2	3
CO c) Develop C programs using one dimensional arrays, dimensional arrays and pointers.	2	3	3	2	2	2	3
CO d) Implement types of user defined functions.	2	3	3	2	2	2	3
CO e) Exhibit use of structure and union in c language.	2	3	3	2	2	2	3
CO f) Implement file and I/O operations in C language.	2	3	3	2	2	2	3

Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.

16.   COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

Sr. No.	Name and Designation	Institute	Contact No.	Email
1.	Shri P. P. Kotak Principal	Government Polytechnic, Rajkot	9825469617	kotakp2003@yahoo.com
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7.	Shri K. M. Madhu Lecturer	K. D. Polytechnic, Patan	9662402343	Kaushalmadhu.cse@gmail.com

NITTTR Resource Persons

Sr. No.	Name and Designation	Department	Contact No.	Email
1.	Dr. R. K. Kapoor	Department of Commuter Science and Engineering Education	0755-2661600 (Ext393)	rkkapor@nitttrbpl.ac.in
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GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
I – Semester

Course Title: **Fundamentals of Computer**
(Course Code: 4310701)

Diploma programme in which this course is offered	Semester in which offered
Computer Engineering	First

1.   RATIONALE

In any business organization the work of documentation, data analysis and presentation are typically carried out in an office set-up. There for it is necessary for students to learn various software tools to carry these activities accurately. The aim of this course is to develop students' fundamental IT skills and develop skills in using various components of MS-office, Internet and Google applications. It will enable them not only to carry out these tasks in their profession in future, but equally useful for making their project reports and presentations during their progression in diploma programme.

2.   COMPETENCY

The purpose of this course is to help the student to attain the following industry identified competency through various teaching learning experiences.

- **Use google applications, various IT software tools for word-processing, data analysis and preparing presentation.**

3.   COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with this competency are to be developed in the student to display the following COs:

a) Use computer system and its peripherals.

b) Create Forms and sheets using Google Application.

c) Perform word processing and basic DTP operation using MS Word.

d) Use spreadsheet application for analyzing and representing data graphically.

e) Prepare electronic slideshow presentation using MS PowerPoint

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (CI+T/2+P/2)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
CI	T	P	C	CA	ESE	CA	ESE	
0	0	4	4	0	0	25*	25	50

 (*): For this practical only course, 25 marks under the practical CA has two components i.e. the assessment of micro-project, which will be done out of 10 marks and the remaining 15 marks are for the assessment of practical. This is designed to facilitate attainment of COs holistically, as there is no theory ESE.

*Legends: **CI**-Class Room Instructions; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit, **CA** - Continuous Assessment; **ESE** - End Semester Examination.*

5.   SUGGESTED PRACTICAL EXERCISES
The following practical outcomes (PrOs) are the sub-components of the COs. *These PrOs need to be attained to achieve the COs.*

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Create and Manage Files & Folders	I	02
2	(a) Create Gmail Account and use its Features like adding contacts (b) Compose mail, create and manage labels, filters and signatures	II	02
3	Configure browser settings and use browsers.	II	02
4	Create and Manage Files and Folders in Google Drive	II	02
4	MS-Word: Create and Design Admission/Enquiry Forms for Students: use shapes, text boxes, colors, formatting options, tables, and horizontal lines etc.	III	02
5	MS-Word: Create bills/brochures for Company: Use Insert menu option, text adjustment between the table, page size, text boxes	III	02
6	MS-Word: Use smart art and create organization charts	III	02
7	MS-Word: Design E-book cover pages / Magazine front/ books front/back page: Header & Footer	III	02
8	MS-Word: Design a Happy Birthday Message by using Word Art and print it.	III	02
9	MS-Word: Design Newspaper advertisement: Use high-quality images, text, and layout	III	02
10	MS-Word: Create a chart and show the Results comparison between 2019, 2020, and 2021	III	02
11	MS-Word: Insert template in Microsoft Word from the Internet and edit those templates with your content.	III	02
12	MS-Word: Create Letter Head	III	02
13	Google document: Create Google Document for Resume	II	02
14	MS Excel: - Create Work book using basic features of Excel	IV	02
15	MS Excel: Create basic charts for 2020 Car sales	IV	02

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
16	MS Excel: Create Target Sheet for Company using Conditional Formula	IV	02
17	MS Excel: Create Company Salary Table using VLOOKUP	IV	02
18	MS Excel: Create Pivot Table and Pivot Chart For any Expense Sheet	IV	02
19	MS Excel: Create Worksheet using Macros	IV	02
20	MS Excel: Create Pay bills, pay slips, Electricity bills using Excel	IV	02
21	Google Sheet: Create Google Sheet for Results of Students	II	02
22	MS Power Point: Create Presentation with basic formatting features, insert and delete slides, using master slide	V	02
23	MS Power Point: Working with drawing tools, applying shape or picture styles, Applying object borders, object fill, object effects.	V	02
24	MS Power Point: Create Table and Charts in Presentation	V	02
25	MS Power Point: Create PPT with adding Sound, Video, Animation, Transition and Hyperlink in Presentation	V	02
27	Google Presentation: Create a Google Presentation comprising of all the features as mentioned in previous practicals.	II	02
28	Google Form: (a) Create google form for User's feedback (b) Create a sample quiz	II	02
	Total		56

Note

  i. *More **Practical Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.*
 ii. *Care must be taken in assigning and assessing study report as it is a first year study report. Study report, data collection and analysis report must be assigned in a group. Teacher has to discuss about type of data (which and why) before group start their market survey.*
iii. *The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical Exercises** of this course required which are embedded in the COs and ultimately the competency.*

S. No.	Sample Performance Indicators for the PrOs	Weightage in %
1	Software Installation setup	10
2	Use of Internet Technology and Applications	10
3	Designing ability for given problem using related MS-Office component	40
4	Relevance and quality of output	30
5	Answer to sample questions	10
	Total	**100**

6.   MAJOR EQUIPMENT/ INSTRUMENTS AND SOFTWARE REQUIRED

These major equipment with broad specifications for the PrOs is a guide to procure them by the administrators, so uniformity for conducting practical can be maintained across the state.

S. No.	Equipment Name with Broad Specifications	PrO. No.
1	Computer with basic configuration and Internet Facility	All
2	MS-OFFICE	All

7.   AFFECTIVE DOMAIN OUTCOMES

The following *sample* Affective Domain Outcomes (ADOs) are embedded in many of the above-mentioned COs and PrOs. More could be added to fulfil the development of this competency.
   a) Follow safety practices.
   b) Practice good housekeeping.
   c) Demonstrate working as a leader/a team member.
   d) Maintain tools and equipment
   e) Follow ethical practices.

The ADOs are best developed through the laboratory/field-based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:
   i.   'Valuing Level' in 1st year
   ii. 'Organization Level' in 2nd year.
   iii. 'Characterization Level' in 3rd year.

8.   UNDERPINNING THEORY

The major underpinning theory is given below based on the UOs of *Revised Bloom's taxonomy* that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit –I: **Basics of Computer**	1a. List Generation of Computer 1b. Classify the given type of Device 1c. Describe functioning of CU, ALU and memory unit 1d. Differentiate various types of Storage Devices 1e. Classifying Computer Languages 1f. Explain various file handling operations	1.1 Introduction to a Computer 1.2 Generations of Computer 1.3 Computer Block Diagram: Input and output unit, CPU (ALU+CU) and Memory Unit 1.4 Input and Output Devices 1.5 Storage Devices: Primary and Secondary Storage Devices 1.6 Types of Software: Application and System 1.7 Computer Languages: Low- level and High-level Languages 1.8 Window Basic: Creating folder, Deleting, Renaming, Searching files/Folders, Overview of Control Panel and Taskbar, Installation of MS-office/any application software.

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
Unit– II: **Basics of Internet and Google Applications**	2a. Describe basic terminologies of Internet 2b. Write the procedure of creating Email Account. 2c. Explain different features of google drive 2d. Write the procedure to Create Google form with validation checks.	**Basics of Internet** 2.1 Introduction to internet 2.2 Basic Internet Terminologies: Browser, Webpage, Website, URL, WWW 2.3 Introduction to Email **Google Applications** 2.4 Gmail: Create an account; Adding Contacts; Composing an Email; Creating and Managing Labels, Filters and Signature 2.5 Drive: Create a folder, Upload and Download Files/folders, Sharing Files/Folders 2.6 Forms: Create a Form; Validate a Form; Share a Form; Managing Response
Unit– III: **MS-Word**	3a. Describe the given features of MS Word 3b. Select basics text formatting features 3c. Write steps to apply graphics and pictures in the document. 3d. Explain procedure to Create and manipulate table with styles 3e. Explain the procedure to apply Proofing, sharing and Printing Document 3f. write steps to create Google Document	3.1 Functions and features of Word processor 3.2 Text Basics: Typing the text, Alignment of text, Editing Text: Cut, Copy, Paste, Select All, Clear, Find & Replace 3.3 Text Formatting and saving file: New, Open, Close, Save, Save As, Formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline, Change the Text Case, Line spacing, Paragraph spacing, Shading text and paragraph, Working with Tabs and Indents 3.4 Working with Objects: Shapes, Clipart and Picture, Word Art, Smart Art, Columns and Orderings - To Add Columns to a Document, Change the Order of Objects, Page Number, Date & Time, Inserting Text boxes, Inserting Word art, inserting symbols, Inserting Chart 3.5 Working with bullets and numbered lists: Multilevel numbering and Bulleting, Creating List, Customizing List style, Page bordering, Page background 3.6 Tables: Working with Tables, Table Formatting, Table Styles, Alignment option, Merge and split option

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
		3.7 Styles and Content: Using Build- in Styles, Modifying Styles, Creating Styles, creating a list style, Table of contents and references, adding internal references, adding a Footnote, Adding Endnote
		3.8 Sharing and Maintaining Document: Changing Word Options, Changing the Proofing Tools, Managing Templates, Restricting Document Access, Using Protected View, Working with Templates: Managing Templates, Understanding building blocks
		3.9 Testing and Printing the document, Check Spelling as You Type, Mark Grammar Errors as You Type, Setting AutoCorrect Options, Page Setup, setting margins, Print Preview, Print
		3.10 Google Docs sheet: creating and sharing
Unit–IV: **MS-Excel**	4a. Describe Features of Spreadsheet 4b. Explain basics formatting features of Excel 4c. Explain procedure to apply Formulas and calculation in Excel Spreadsheet with cross referencing and validation 4d. Explain procedure to create and Manipulate Charts and diagrams 4e. Explain procedure to create and Manipulate Pivot Table and Charts 4f. Write steps to Create Google Spreadsheet	4.1 Introduction to Excel: Introduction to Excel interface, understanding rows and columns, Naming Cells, working with excel workbook and sheets 4.2 Formatting excel work book: New, Open, Close, Save, Save As, Formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline, wrap text, Merge and Centre, Currency, Accounting and other formats, Modifying Columns, Rows & Cells 4.3 Perform Calculations with Functions: Creating Simple Formulas, Setting up your own formula, Date and Time Functions, Financial Functions, Logical Functions, Lookup and Reference, Functions Mathematical Functions, Statistical Functions, Text Functions. 4.4 Sort and Filter Data with Excel: Sort and filtering data, using number filter, Text filter, Custom filtering, Removing filters from columns, Conditional formatting

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
		4.5 Create Effective Charts to Present Data Visually: Inserting Column, Pie chart etc., Create an effective chart with Chart Tool, Design, Format, and Layout options, adding chart title, changing layouts, Chart styles, editing chart data range, editing data series, Changing chart Analyze Data Using PivotTables and Pivot Charts: Understand PivotTables, create a PivotTable, Framework Using the PivotTable and PivotChart, Create Pivot Chart from pivot Table, inserting slicer, Creating Calculated fields 4.6 Use Macros to Automate Tasks, Creating and Recording Macros, Assigning Macros to the work sheets, Saving Macro enabled workbook, Cross Referencing and Data Validation: VLOOKUP, Validation 4.7 Google Excel sheet: creating and sharing
Unit–V: **MS-PowerPoint**	5a. Explain procedure to create presentation with basic features of PowerPoint. 5b. Explain procedure to apply themes, animation and hyperlink in presentation 5c. Explain procedure to apply audio and sounds with inserting pictures, chart and Clipboard 5d. Write steps to create Master slides 5e. Explain procedure for printing, sharing, and exporting slides 5f. Explain procedure to create Google PowerPoint Presentation	5.1 Setting Up PowerPoint Environment: New, Open, Close, Save, Save As, Typing the text, Alignment of text, Formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline, Cut, Copy, Paste, Select All, Clear text, Find & Replace, Working with Tabs and Indents 5.2 Creating slides and applying themes: Inserting new slide, changing layout of slides, duplicating slides, Copying and pasting slide, applying themes to the slide layout, changing theme color, Slide background, Formatting slide background, Using slide views 5.3 Working with bullets and numbering: Multilevel numbering and Bulleting, Creating List, Page bordering, Page background, Aligning text, Text directions, Column's option 5.4 Working with Objects: Shapes, Clipart and Picture, Word Art,

Unit	Unit Outcomes (UOs) (4 to 6 UOs at different levels)	Topics and Sub-topics
		Smart Art, Change the Order of Objects, inserting slide header and footer, Inserting Text boxes, inserting shapes, using quick styles, Inserting Word art, inserting symbols, Inserting Chart
		5.5 Hyperlinks and Action Buttons: Inserting Hyperlinks and Action Buttons, Edit Hyperlinks and Action Button, Word Art and Shapes
		5.6 Working with Movies and Sounds: Inserting Movie from a Computer File, Inserting Audio file, Audio Video playback and format options, Video options, adjust options, Reshaping and bordering Video
		5.7 Using SmartArt and Tables: Working with Tables, Table Formatting, Table Styles, Alignment option, Merge and split option Converting text to smart art
		5.8 Animation and Slide Transition: Default Animation, Custom Animation, modify a Default or Custom Animation, Reorder Animation Using Transitions, apply a Slide Transition, modifying a, Transition, Advancing to the Next Slide
		5.9 Using slide Master: Using slide master, inserting layout option, creating custom layout, Inserting place holders, Formatting place holders
		5.10 Slide show option: Start slide show, Start shows from the current slide, rehearse timing, Creating custom slide show
		5.11 Testing and Printing: Check Spelling as You Type, Setting AutoCorrect Options, save as video, Save as JPEG files, Save as PowerPoint Show file, Print Preview, Print

Note: *The UOs need to be formulated at the 'Application Level' and above of Revised Bloom's Taxonomy' to accelerate the attainment of the COs and the competency.*

9.   SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A	Total Marks
I	Basics of Computer					
II	Basics of Internet and Google Applications					
III	MS-Word		**Not Applicable**			
IV	MS-Excel					
V	MS-PowerPoint					
	Total					

Legends: R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)

Note: *This specification table provides general guidelines to assist student for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions to assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may slightly vary from above table.*

10.   SUGGESTED STUDENT ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested student-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should conduct following activities in group and prepare small reports of about 5 pages for each activity. They should also collect/record physical evidences such as photographs/videos of the activities for their (student's) portfolio which will be useful for their placement interviews:

a) Undertake micro-projects in team/individually.
b) Encourage Students for creating and designing forms related to Departmental work.
c) Encourage students to participate in the Microsoft-Office Specialist World Championship.
d) Students are encouraged to register themselves in various MOOCs such as: Swayam, edx, Coursera, Udemy etc to further enhance their learning.
e) Undertake a market survey of different Version like new and improved desktop apps, as well as mobile apps and a web-based alternative for both Windows and Mac users.

11.   SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:

a) Guide student(s) in undertaking micro-projects.
b) Diagnosing Essential Missed Learning concepts that will help for students to improve their performance.
c) Guide Students to do Personalized learning so that students can understand the course material at his or her pace.
d) Encourage students to do Group learning by sharing so that learning can be enhanced.

e) About *20% of the topics/sub-topics* which are relatively simpler or descriptive in nature is to be given to the students for *self-learning*, but to be assessed using different assessment methods.

f) Guide students on addressing the issues on environment and sustainability using the knowledge of this course

12.   SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project are group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of students in the group should *not exceed three.*

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The duration of the microproject should be about **14-16** *(fourteen to sixteen) student engagement hours* during the course. The students ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This has to match the competency and the COs. Similar micro-projects could be added by the concerned course teacher:

a. Word documents: Prepare Subject teacher shall assign document/Reports to be prepared by each student covering all the major features of MS word.

b. Slide Presentations: Prepare slides show with all Presentation features such as: classroom presentation, presentation about department, presentation about institute, presentation of report. (Subject teacher shall assign a presentation to be prepared by each student).

c. Spreadsheets: Prepare Pay bills/salary statements, tax statement, student's assessment record, Students fees system, earning and expenditure statement of a company to ascertain profit-loss etc. using spreadsheet. (Teacher shall assign a spreadsheet to be prepared by each student).

d. Microproject problems can be designed by the teachers by combining the features of multiple s/w tools. For e.g. data can be collected through Google form, can be organized and analyzed using excel and finally presented using a presentation/ document.

13.   SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1.	Fundamentals of Computers, Sixth Edition	Rajaraman V, Adabala N	Prentice Hall India Learning Private Limited, ISBN: 8120350677
2.	MS-Office for Dummies	Wallace Wang	Wiley India, New Delhi, ISBN: 9788126578559
3.	Sams Teach Yourself Internet and Web Basics All in One	Ned Snell, Bob Temple, Michael Clark	Sams Publishing, Indiana, USA, ISBN:0672-32533-0

14.   SUGGESTED LEARNING WEBSITES

a) https://www.tutorialspoint.com

b) https://edu.google.com/intl/ALL_in/teacher-enter/products/forms/?modal_active=none

c) www.w3schools com

d) https://support.microsoft.com/en-us/training

e) https://edu.gcfglobal.org/en/topics/googleapps/

f) https://www.udemy.com

g) https://www.coursera.org/

15.   PO-COMPETENCY-CO MAPPING

Semester-I	Fundamentals of Computer (Course Code: 4310701)						
	POs						
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/ develop-ment of solutions	PO 4 Engineering Tools, Experimen-tation &Testing	PO 5 Engineering practices for society, sustainability & environment	PO 6 Project Manage-ment	PO 7 Life-long learning
Competency *Use Fundamentals of Computer in various engineering applications*							
Course Outcomes CO a)Manage file and folders in OS.	1	-	-	1	-	-	1
CO b) Create Google Forms and Email account.	2	1	1	1	-	-	1
CO c)Perform word processing and basic DTP operation using MS Word.	2	1	1	1	-	-	1
CO d)Use spreadsheet application for analyzing and representing data graphically.	2	1	1	1	-	-	1
CO e)Prepare electronic slideshow presentation using MS PowerPoint.	2	1	1	1	-	-	1

Legend: '**3**' for high, '**2**' for medium, **'1'** for low and **'-'** for no correlation of each CO with PO.

16.   COURSE CURRICULUM DEVELOPMENT COMMITTEE

GTU Resource Persons

S. No.	Name and Designation	Institute	Contact No.	Email
1.	Shri P. P. Kotak Principal	Government Polytechnic, Rajkot	9825469617	kotakp2003@yahoo.com
2.	Smt. M. P. Mehta HOD	Government Polytechnic, Gandhinagar	9879578273	manishamehtain@gmail.com
3.	Smt. Jigna N. Acharya Lecturer	K.D.Polytechnic, Patan	9428752038	jignaforever@gmail.com
4.	Smt. Manisha Chaudhary Lecturer	Government Polytechnic, Gandhinagar	9825309203	Manisha224@gmail.com

NITTTR Resource Persons

Sr. No.	Name and Designation	Department	Contact No.	Email
1.	Dr. R. K. Kapoor	Department of Commuter Science and Engineering Education	0755-2661600 (Ext393)	rkkapor@nitttrbpl.ac.in
2.	Dr. Sanjay Agrawal	Department of Commuter Science and Engineering Education	0755-2661600 (Ext392)	sagrawal@nitttrbpl.ac.in

Induction Program for Diploma Engineering

Preamble:

As suggested in Model Curriculum of Diploma by AICTE, all students will have to undergo a mandatory induction program as part of their Diploma Programme Curriculum right at the start of the first year. The duration of the induction program will be of two weeks (12 Working Days) wherein students will undergo a wide variety of activities without actually starting with their usual classes. Normal classes will start only after the induction program is over.

This will help build confidence among the new students, instill a sense of connect and appreciation towards their institution, provide them with the comfortable environment to adjust and pick up friendship with other students, facilitate them to get to know important functionaries and faculty members of the institution, equip them with human and social values.

The Induction Program will help the new students in building social character, leadership qualities, self-confidence, creativity and appreciation for mankind and nature at large. In nutshell, the induction program is envisaged to give the new students the broader foundational experience for the life- long success.

The new students, in the process, will get to learn about various processes and procedures in place in the institution, facilities and best practices, student activities, and the culture & values prevailing in the institution. The Program is also expected to be used for rectifying some critical lacunas, for example, Communication Skills in English for those students who have deficiency in it. Such students can be identified by conducting diagnostic tests and special Proficiency Modules can be conducted for them.

The mentor-mentee groups of the students are formed with each group comprising small number of students and being associated with a faculty mentor. Then the different activities start with a healthy daily routine.

Scheme:

Sr No	Phase and Activities Heads	Weightage	Hours
1.	**Initial Phase**	**1 day (6 Hrs)**	**6**
2	**Regular Phase**	**10 Days**	**60**
a)	Physical activity	14 Hours	14
b)	Creative Arts & Culture	10 Hours	10
c)	Mentoring & Universal Human Values	8 Hours	8
d)	Literary Activity	6 Hours	6
e)	Proficiency Modules	6 Hours	6
f)	Lectures & Workshop by Eminent People	3 Hours: 3 Expert Lectures, One per Week	3
g)	Visits to local Areas or Industry	1 Day	10
h)	Co & Extra-curricular Activities in the institute	3 Hours	3
3	**Closing Phase (Feedback & Report)**	**1 Day (6 Hrs)**	**6**
	Total	**72 Hours/ 12 Days**	**72**

Phases, Modules, Activities and Guidelines:

The activity during Induction Program would have an Initial Phase, a Regular Phase and a Closing Phase. The initial and closing phases would be one day each. The following is the guidelines indicating the possible activities under each phase of the Induction Program.

Initial Phase (First Day)-6 Hrs.

Following are the activities to be carried on the first day:
- Orientation Programme
- Know your Department/Institute
- Know your university
- Know hostel and other amenities
- Information about Student Diary and Induction Program

Regular Phase (10 Days)-60 Hrs.

The Regular Phase consists of 8 days; each day is of 6 hours. It may cover any/ all the 8 different activity modules. For each module, the objectives, suggested activities and guidelines are provided herewith. Institute can form their time table according to local situation and priorities or use additional relevant activities in additional in suggested activities for each of the phases.

Module Name	Objectives	Suggested Activities
1. **Physical Activity** (**14 hours**)	1. Improve bone health 2. Improve cardio respiratory and muscular fitness 3. Understand the anatomy, basic biomechanical principles and terminology. 4. Examine the effect of nutrition, rest and other lifestyle factors that contribute to the better health.	1. Running/Jogging 2. Brisk Walk 3. Cycling 4. Heavy yard work 5. Swimming 6. Yoga/Pranayama 7. Aerobics 8. Outdoor Sports/Indoor Games(In addition to cricket, Volleyball, Badminton, Chess, Carom, Table Tennis, Other games like Critical Thinking, Math skill developing Games, Memory Games can be included.) 9. Calculate Body mass index of each students and explain their fitness level fromit. 10. Tree Plantation 11. Gardening

Guidelines:
- Half an hour Yoga/Pranayama followed by physical activities including various games.
- Refer this link for Yoga/Pranayama
  https://yoga.ayush.gov.in/public/assets/front/pdf/CYPEnglishBooklet.pdf

Module Name	Objectives	Suggested Activities
2. **Creative Arts & Culture** (**10 hours**)	1. Develop creativity and imagination through a range of complexactivities. 2. Improve the student's ability to control materials, tools and techniques. 3. Develop increasing confidence in the use of visual and tactile elements and materials.	1. Make a model of any physical object related to Engineering Design 2. Crafting 3. Painting 4. Sculpture 5. Pottery 6. Music 7. Dance

Guidelines:
- Use any activities leading to creative thing and practice.
- Show the video demonstrating the creative ideas and thinking.
- Show the video demonstrating phenomenon performance using innovation in different areas of humanity and social science.
- Demonstrate the story of leaders with the context of how with their creative vision, with all odds they achieved success.

Module Name	Objectives	Suggested Activities
3. **Mentoring & Universal Human Values** **(08 hours)**	1. Impart universal human values in students. 2. Enable students to live in harmony within themselves, with family, with society and the nature 3. Initiate the process of self-exploration and self-investigation within themselves about their understanding of happiness.	1. Mentoring for creating a learning relationship 2. Showing Motivational Movies. 3. Social Activities like visit of orphanage,old age home, blind people association, Apang Manav Mandal etc. 4. Swachchhata Mission Activities. 5. Awareness regarding environmental issues and remedies. 6. Spread awareness about blood donation, organ donation, precaution to avoid malaria in monsoon etc. 7. Discuss autobiography of legendary persons who practiced universal human values in their life and work. 8. Conduct universal human values group discussions.

Guidelines:
- Use the materials and activities covered in the FDP on Induction Program held at GTU organized by AICTE.
- The faculties trained from institute will take leadership role to rollout it at institute level.

Module Name	Objectives	Suggested Activities
4. **Literary Activity** **(06 hours)**	1. Inculcate the habit of active (or interactive) consumption of the best content available in literature. 2. Develop thinking skills. 3. Improve reading abilities and attitude.	1. Digital literacy and use of Internet 2. Basic Mathematics for Solving Real World Problems 3. Use of Scientific Calculator in Engineering 4. General Knowledge Quiz Competition 5. Vedic Mathematics 6. Reading/writing/speaking/listening 7. Debating/Elocution 8. Enacting a play 9. Book review 10. Digital India Portal 11. Vernacular Literature

Guidelines:
- Use the video lectures to literate students in different skills needed for day-to-day life and need.
- Motivate students to create the nature of inquiry and reading habits.
- Arrange the various competitions like Elocution, Essay writing, Storytelling, Bookreviews etc.
- Writing the review of the well-known books, movies etc. and sharing.

Module Name	Objectives	Suggested Activities
5. **Proficiency Modules (06 hours)**	1. Determining English proficiency level of students and mentoring accordingly. 2. Learn the mining vocabulary, idioms, and expressions and Understand their meanings in context. 3. Develop ability to write a paragraph about general topics by using the English language correctly. 4. Realize the importance of English language as a global business language.	1. Activity by Faculty from Communication Skills/ English from Science & Humanities/ General Departments 2. English general diagnostic test to Determine student's English proficiencylevel. 3. Mentoring students to improve in English proficiency according to his/her proficiency level based on test.

Guidelines:
- An MCQ test of **30 Marks / 30 minutes** should be conducted covering basic grammar andvocabulary.
- Group the students in three groups based on test result in three proficiency levels:
  - Unsatisfactory
  - Satisfactory
  - Good
- Following activities are to be used to uplift proficiency levels of students.
  - Motivational movies, documentary
  - Language games
  - Essay/story writing
  - Ice breaking games.
- Separate set of activities from suggested list should be used for different groups.
- Groups requiring Mentoring may be identified and informed to respective departments for their development in future
- Groups who can lead can also be identified and informed to respective departments for their development in future

Module Name	Objectives	Suggested Activities
6. **Lectures & Workshop by Eminent people (03 hours)**	1. Motivation through knowing experience of successful person / Alumni. 2. Meet and interact with eminent personalities of different fields.	1. To conduct lecture by eminent people. 2. Interaction with leaders, experts, entrepreneurs, contributors and successful personalities / alumni.

Guidelines:
- 3 expert lectures each of 1 hour for every discipline. It should be arranged at department level or Common for institute. If multiple disciplines are to be combined in an expert lecture then it may be arranged in both the weeks so as to accommodate all branches.
- External expert should be invited.
- Expert can be from academic, industry, research organization, social organization etc.
- An individual successful person in any of the field can be invited.
- The aspect to be addressed may be social / economical / engineering / entrepreneurship/ spiritual/ humanity science.

Module Name	Objectives	Suggested Activities

7.
Visit to LocalArea and Industry
(1 Full day-10 Hrs.)
	1. To familiarize students with the local area.
	2. Sensitize with the different aspects of the life including social services and heritage
		1. A full day visit covering at least 2 or 3 places.
		2. List of possible places
		   A. Centre of excellence
		   B. Elite Academic Institutes
		   C. Research institute
		   D. Hospitals
		   E. Industry visit
		   F. Heritage places

Guideline and References:
- Institute can arrange visit to public, social or specifies places to give insight of the activities and overall socio-economic contribution of such places.
- The uniqueness or impact of such visits should be highlighted.

Module Name	Objectives	Suggested Activities
8. **Co & Extra Curricular** **Activities in the institute** **(03 hours)**	1. Introduce the student about innovation in different fields 2. Make students aware about innovative and modern practices and products in their own branch 3. Create awareness about support available for start-up and innovation	1. Lectures by Convener/ senior members of Gymkhana Committee. 2. Showing videos demonstrating Gymkhana Activity / Talent hunt/ Performances. 3. Introducing NSS Activity 4. Awareness regarding SSIP Scheme of Government of Gujarat 5. Awareness about Government initiatives in areas of innovations and supports for start- up, Incubation, Entrepreneurship etc.

Guideline:
- Video lectures of Gymkhana Activity / Talent hunt/ Performances
- Video lectures from leaders and innovators.
- TeDx Talks.
- Government Policy documents for different schemes.

Closing Phase (Last Day)

The closing phase is the last day of the Induction Program and covering conclusion andsummary of the Induction Program.
- **Conclusion and summary:**
- Guiding students for preparation of student report about Induction Program.
- Instruct students regarding submission and examination of the Induction Program.
- Address by HODs/Senior faculties regarding branch/discipline and career option in respective branch.

- Introduce about the engineering and its importance in life and their responsibilitiestowards the society.

General Regulations:

a) Every student has to maintain a daily diary. Format of the diary is already given.

b) After completion of the Induction program student has to prepare a report based onactivities performed during the Induction program. Diary will be attached as Appendix in Report.

c) 75% Attendance is required during Induction Program.

d) This program will be noncredit subject but it will reflect in 1st Semester Mark sheet as PASS or FAIL.

e) Institute should appoint a mentor for a group of 20 to 30 students. Mentor can take help of senior students.

f) If student gets admission transfer in other college during Induction Program the diary will be continued from previous college to new college.

g) If student gets admission in middle of the Induction Program or student gets admission after Induction Program, it is responsibility of the institute to fulfill the criteria of the Induction Program.

h) If student fails in the Induction program the student has to clear the same during subsequent Semester

Evaluation Pattern:

1. Induction Program is Mandatory course for each branch of Engineering.
2. It is mandatory for each student to clear Induction Program with PASS grade.
3. Grades for Induction Program are either PASS or FAIL and have no credits. Evaluation for Induction Program is based on the Induction Program Report prepared by a student from Student diary and student will be declared PASS or FAIL.
4. Student has to submit the Induction Program Report at the end of first semester dully approved by Mentor and HOD.
5. Evaluation of Induction Program will be done along with first Semester Term-Work Submission.
6. The evaluation is carried out by Internal Examiner from institute itself. The entry on the GTU portal will be PASS or FAIL, not marks.
7. The students who will FAIL have to reappear again after every 6 months as remedial exam.

Guidelines for Program Report:

1) Report should have minimum 15 pages.
2) Report must have One Photograph per Activity.
3) Report consists of Certificate, Index and Diary as Appendix.
4) Report should be dully signed by Mentor and HOD.
5) Index will have following sequence:

[A] The Suggestive List of activities is as mentioned below:

- ✓ Physical Activity
- ✓ Creative Arts and Culture
- ✓ Mentoring & Universal Human Values
- ✓ Familiarization with the institution, Dept. /Branch
- ✓ Literary Activity
- ✓ Proficiency Modules
- ✓ Lectures & Workshops by Eminent People
- ✓ Visits in Local Area
- ✓ Extra-Curricular Activities in the institution
- ✓ Feedback and Report on the Program

Induction Program Schedule (Suggestive only)

Note: It is presumed that the first year students are so divided into two major groups that the number of students in each group is almost equal with some branches forming part of Group-I while the rest of the branches being part of Group-II. Grouping can also be done at discipline/ department level.

The detailed suggestive program is as under:

Arrival to Hostel/ Accommodation			
Time	**Activity**	**Students' Group**	**Venue**
Whole day	Students arrive - Hostel allotment	I & II	Respective Hostels / Accommodation
DAY 1- Initial Phase- Reporting at 10.00 am in the respective Departments			
10.30 am – 12.00	Mentor-mentee groups - Introduction with-in group. ● Orientation Programme ● Know your Department/Institute ● Know your university ● Know hostel and other amenities	I	Suitable Venue as per number of mentor-mentee groups
	Screening of Institute Documentary Movie; video clips of various functions and events	II	Conference/Seminar Hall
12.00 – 01.30 pm	Mentor-mentee groups - Introduction with- in group. ● Orientation Programme ● Know your Department/Institute ● Know your university ● Know hostel and other amenities	II	Suitable Venue as per number of mentor-mentee groups
	Screening of Institute Documentary Movie; video clips of various functions and events	I	Conference/Seminar Hall
1.30 pm – 2.00 pm	Lunch	I & II	Respective Departments/ Hostels/ Mess/ canteens
2.00 pm – 5.00 pm	Institute Excursion	I & II	Around the Campus
DAY 2 to 10- Regular Phase -Timings can be changed for Physical / other Activities as per local requirements			
10.30 am – 12.00	Events from [A] are to be scheduled as per guidelines and local convenience i.e. Various activities from Regular Phase like Physical Activity Creative Arts and Culture Mentoring & Universal Human Values Familiarization with the institution, Dept. /Branch Literary Activity Proficiency Modules Lectures & Workshops by Eminent People Visits in Local Area Extra-Curricular Activities in the institution Feedback and Report on the Program	I II	Suitable Indoor/ Outdoor Venue in respective Departments as per number of mentor-mentee groups or Conference / Seminar Hall

12.00 – 01.30 pm	Events from [A] are to be scheduled as per guidelines and local convenience	II	Suitable Indoor/ Outdoor Venue in respective Departments as pernumber of mentor-mentee groups or Conference / Seminar Hall
		I	
1.30 pm – 2.00 pm	Lunch	I & II	Respective Departments/ Hostels/ Mess/ canteens
2.00 pm – 5.00 pm	Events from [A] are to be scheduled as per guidelines and local convenience	I	Suitable Indoor/ Outdoor Venue in respective Departments as pernumber of mentor-mentee groups or Conference / Seminar Hall
		II	
DAY 11- Visits to local Areas or Industry/ Any 1 DAY from above			
DAY 12- Closing Phase (Feedback & Report)			
10.30 am – 12.00	• Guiding students for preparation of student report about Induction Program. • Instruct students regarding submission and examination of the Induction Program.	I	Suitable Indoor/ Outdoor Venue in respective Departments as pernumber of mentor-mentee groups or Conference / Seminar Hall
	• Address by HODs/Senior faculties regarding branch/discipline and career option in respective branch. • Introduce about the engineering and its importance in life and their responsibilities towards the society.	II	
12.00 – 01.30 pm	• Address by HODs/Senior faculties regarding branch/discipline and career option in respective branch. • Introduce about the engineering and its importance in life and their responsibilities towards the society.	II	Suitable Indoor/ Outdoor Venue in respective Departments as pernumber of mentor-mentee groups or Conference / Seminar Hall
	• Guiding students for preparation of student report about Induction Program. • Instruct students regarding submission and examination of the Induction Program.	I	
1.30 pm – 2.00 pm	Lunch	I & II	Respective Departments/ Hostels/ Mess/ canteens
2.00 pm – 5.00 pm	Talent Show and Valedictory Function Principal's Address	I & II	Suitable Indoor/ Outdoor Venue in respective Departments as pernumber of mentor-mentee groups or Conference / Seminar Hall

Note:
1) Total duration of the Induction Program is two weeks i.e. 12 working days with Saturdays being working and Sundays off.
2) Sundays can be utilized for screening some Patriotic / Socially Significant Movies/ home viewing.
3) Faculty mentors would be required to obtain the feedback cum suggestions of the students of their respective groups about the Induction programme on the last day.

4) Coordinators can be assigned for various activities during the induction programme.

The suggestive template is as under:

S. No.	Name of the activity	Coordinators
1.	Visits to different departments and around the campus	HoDs
2.	Physical/Sports activities in the Sports Ground (Morning as well as Evening)	In charge of Physical Education / Sports/ Gymkhana Activity
3.	Creative Arts / Technical Workshops. Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists. Talent Show and Valedictory Function.	In charge of Technical / Cultural activities/ Gymkhana Activity
4.	Presentation cum Interactive Session with Eminent Alumni / Eminent Speaker	Training & Placement In charge of Department
5.	Universal Human Values	Suitable Faculty members
6.	Proficiency Module (English)	Faculty of English language
7.	Local Visits	Hostel Wardens / Discipline in –charge, 1Sr. & 1 Jr. Faculty
8.	Wake up call/Hostel related activities and Arrangements at Valedictory Function	Chief Wardens (Boys/Girls) Gymkhana Members

- **Schedule of local visits can be tabulated as under:**

Dates	Sections
…	…
…	…
…	…

- **Note:**
1) The faculty mentors of the respective mentor-mentee groups / sections will accompany the students on local visits.
2) The Institute buses, if there, may be made available for the purpose each day or some other/ local arrangements may be made.
3) Attendance of the students' needs to be taken at the time of departure and return.

GTU BoS Resource Persons

Sr. No.	Name and Designation	Institute	Contact No.	Email
1	Shri U. V. Buch- BoS Member and Subject in-charge (EC)	G P Ahmedabad	9825346922	uvbuch@gmail.com

NB: The format of diary to be maintained will be as per Annexure-I

Induction Program for Diploma Engineering
Format of Diary

Enrolment/Roll No: _____

Name of Student: _____

Dates from :_____ to _____			
Day	**Activities Done**	**Learning Outcomes**	**Remarks**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
Signature of the Student			
Evaluation: PASS/ FAIL			
Signature with Date of Mentor		**Signature of HoD**	