

STATE COUNCIL OF TECHNICAL EDUCATION AND VOCATIONAL TRAINING, ODISHA
TEACHING AND EVALUATION SCHEME FOR DIPLOMA IN ENGINEERING COURSES

DISCIPLINE: BIO-TECHNOLOGY						SEMESTER: 3RD						
SL NO	SUBJECT CODE	SUBJECT	PERIODS			EVALUATION SCHEME						
			L	T	P	SESSIONAL EXAM			END SEM EXAM	TERM WORK	PRACTICAL EXAM	TOTAL MARKS
						TA	CT	Total				
THEORY												
1.	BTT 301	BASIC LIFE SCIENCE	3	1	0	10	20	30	70			100
2.	BTT 302	ELEMENTS OF CHEMISTRY- I	3	1	0	10	20	30	70			100
3.	BTT 303	ELEMENTS OF CHEMISTRY-II	4	0	0	10	20	30	70			100
4.	BTT 304	INTRODUCTION TO BIOTECHNOLOGY	4	0	0	10	20	30	70			100
5.	BTT 305	CELL BIOLOGY	3	1	0	10	20	30	70			100
PRACTICAL/TERM WORK												
5.	BTP 301	BASIC LIFE SCIENCE	0	0	3					25	--	25
6.	BTP 302	ELEMENTS OF CHEMISTRY- I	0	0	3					25	25	50
7.	BTP 303	ELEMENTS OF CHEMISTRY-II	0	0	3					25	25	50
8.	BTP 304	INTRODUCTION TO BIOTECHNOLOGY	0	0	3					25	---	25
9.	BTP 305	CELL BIOLOGY LABORATORY	0	0	3					25	25	50
10.	BTP 306	TECHNICAL SEMINAR	-		2					25	--	25
11.	BTP 307	SOFT SKILL-1	-	-	2					25		25
GRAND TOTAL			17	3	19	50	100	150	350	175	75	750

Total Contact hours per week: 39
Abbreviations: L-Lecture, T-Tutorial, P-Practical, TA- Teacher's Assessment, CT- Class test
Minimum Pass Mark in each Theory Subject is 35% and in Practical subject is 50%

BASIC LIFE SCIENCE

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTT 301	Semester	3 RD
Total Period:	60	Examination	3 hrs
Theory periods:	3 P/W	Class Test:	20
Tutorial:	1 P/W	Teacher's Assessment:	10
Maximum marks:	100	End Semester Examination:	70

Rationale:

From the pre-historic time, man knew the utilization of plants and animals in various ways. He had the practical interest and curiosity to know the phenomenon of the nature. Primitive man used many wild plants for shelter food, medicine, tools and other purposes. He was also hunting animals for his food and could know how to defend himself from predators. For this, he knows about the habit, habitat and behaviors of various animals and plants. Later useful animals and plants were recognized and man formed stable association with them. This interest of man in animals and plants around him, led the foundation of biology (Basic Life Science)

Objective:

After completion of study of Basic Life Sciences the student will be able to:

1. Know the scope and different aspects of biology in relation to mankind and the Society.
2. Know about the important elements of cell and their physical and chemical behaviour.
3. Know the structure and function of the different systems and their importance for continuation of life in brief.

Topic wise distribution of periods

Sr . No.	Topics	Periods	Marks
1	Introduction to Biology	09	10
2.	Varieties of Life	09	10
3.	Chemicals of Life	09	10
4.	Continuity of Life	09	10
5.	Nutrition	06	10
6.	Respiration	09	10
7.	Transport	09	10
	Total	60	70

COURSE CONTENT

1.0 INTRODUCTION TO BIOLOGY

- 1.1 Concept of Botany
- 1.2 Concept of Zoology
- 1.3 Five kingdom Classification
- 1.4 Types of Cell theories

2.0 VARIETIES OF LIFE

- 2.1 The structure of a Cell
- 2.2 Cell as a Basic unit of life
- 2.3 Differentiation between prokaryotic and eukaryotic cell.
- 2.4 Differentiation between plant cell and animal Cell

3.0 CHEMICALS OF LIFE

- 3.1 Physical and chemical nature of life
- 3.2 Chemical elements present in the cell.
- 3.3 State and explain the principal compounds present in the cell.

4.0 CONTINUITY OF LIFE

- 4.1 The structure and function of cell membrane.
- 4.2 Different cell organelles and their function.
- 4.3 Mendel's laws of inheritance.
- 4.4 Sex linked inheritance.

5.0 NUTRITION

- 5.1 Photosynthesis.
- 5.2 Digestive system and process of digestion in human being.

6.0 RESPIRATION

- 6.1 Cellular respiration.
- 6.2 Structure and function of ATP.
- 6.3 Concept of fermentation.

7.0 TRANSPORT

- 7.1 Plant water relationship.
- 7.2 Transport of water and minerals in plants.
- 7.3 Fundamentals of transpiration.
- 7.4 Circulation of blood in human body.
- 7.5 Immune system in human beings.

LEARNING RESOURCES:

1. Text book of Botany by A.K. Nanda
2. Text book of Zoology by S.Pati, R.R.Nanda and K.K.Ghosh

ELEMENTS OF CHEMISTRY - I

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTT 302	Semester	3 RD
Total Period:	60	Examination	3 hrs
Theory periods:	3 P/W	Class Test:	20
Tutorial:	1 P/W	Teacher's Assessment:	10
Maximum marks:	100	End Semester Examination:	70

Rationale:

The phenomenal progress of technology in the 20th century has brought dramatic changes in human life styles. The technology, which has thus enhanced the quality of human life, is evolved based on scientific research, primarily physical, inorganic and organic Chemistry. Use of various organic and inorganic compounds and their physical phenomenon are very much essential for any process industry. Therefore the knowledge of Chemistry is necessary for the success of Biotechnologists.

Objective:

On completion of study of Physical Chemistry the student will be able to:

1. Conceptualise physical properties of liquid.
2. Understand solution and its properties.
3. Understand the concept of Osmosis and Osmotic Pressure
4. Explain distribution law.
5. Understand the concept of colloids.
6. Understand the concept of Adsorption
7. Understand the concept of chemical kinetics.

Topic wise distribution of periods

Sl. No.	Topics	Periods	Marks
1	PHYSICAL PROPERTIES OF LIQUIDS	10	14
2.	SOLUTIONS	12	12
3.	OSMOSIS AND OSMOTIC PRESSURE	12	10
4.	DISTRIBUTION LAW	08	10
5.	THE COLLOIDS	10	12
6.	ADSORPTION	08	12
	Total	60	70

COURSE CONTENT:

1.0 PHYSICAL PROPERTIES OF LIQUIDS

- 1.1 Intermolecular forces in liquid.
- 1.2 Vapour pressure and determine vapour pressure by static and dynamic method.
- 1.3 Surface tension and determine surface tension by capillary-rise method and drop formation method.
- 1.4 Viscosity and measurement of viscosity by Ostwald method.
- 1.5 Refractive index, specific refraction
- 1.6 Optical activity and measurement of optical activity.
- 1.7 Solve simple problems based on physical properties of liquid.

2.0 SOLUTIONS

- 2.1 Solution and concentration of solution.
- 2.2 Types of solutions.
- 2.3 Ways of expressing concentration.
- 2.4 Solve numerical related to concentration.
- 2.5 The solution of gases in gases.
- 2.6 Henry's law and solve numerical related to it.
- 2.7 Solubility of partially miscible liquids.
- 2.8 Raoult's Law and explain the lowering of vapour pressure and its measurement.

3.0 OSMOSIS AND OSMOTIC PRESSURE.

- 3.1 Osmosis and osmotic pressure with example.
- 3.2 Function of semi permeable membrane.
- 3.3 Osmotic pressure.
- 3.4 The theories of Osmosis.
- 3.5 Reverse osmosis.
- 3.6 The laws of osmotic pressure.
- 3.7 Solve the Simple Problems.
- 3.8 Relation between Vapour Pressure & Osmatic Pressure.

4.0 DISTRIBUTION LAW.

- 4.1 Nernst's distribution law.
- 4.2 Equilibrium constant from distribution coefficient.
- 4.3 Concept of liquid-liquid chromatography.
- 4.4 Applications of distribution law.
- 4.5 Numerical based on distribution law.

5.0 COLLOIDS.

- 5.1 Colloids & Discuss types of colloidal systems.
- 5.2 Characteristics and properties of sols.
- 5.3 The application of colloids.

- 5.4 Methods of preparation of sols & purification of sols.
- 5.5 The optical, kinetic and electrical properties of sols.
- 5.6 Emulsion and explain types of emulsion.
- 5.7 The role of Emulsifier.
- 5.8 The preparation of Emulsions and their properties.

6.0 ADSORPTION.

- 6.1 Adsorption
- 6.2 Compare absorption and adsorption
- 6.3 Types of adsorption.
- 6.4 Physical adsorption and Chemisorption.
- 6.5 Langmuir adsorption isotherm.
- 6.6 The application of adsorption
- 6.7 The Ion- exchange adsorption and discuss its application.

LEARNING RESOURCES:

TEXT BOOK:

1. B.S. Bahl, H.D. Tuli, A. Bahl, “ Essentials of Physical Chemistry” S. Chand & Co.

REFERENCE BOOKS:

1. K.K. Sharma, L.K. Sharma: Physical Chemistry.
2. Puri, Sharma, Pathania : Principle of Physical Chemistry.

ELEMENTARY CHEMISTRY –II

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTT 303	Semester	3 RD
Total Period:	60	Examination	3 hrs
Theory periods:	4 P/W	Class Test:	20
Tutorial:		Teacher's Assessment:	10
Maximum marks:	100	End Semester Examination:	70

Rationale:

Study of organic chemistry as a separate subject is more practical and fruitful. The knowledge of structure and function of a large no. of compounds built of relatively few elements is important for future bio-technologist.

Objective:

On completion of study of Organic Chemistry, the student will be able to:

1. Name organic compound in IUPAC system
2. Understand the concept of isomerisation
3. Acquaint themselves with methods preparation, properties and use of common aromatic and aliphatic compounds.
4. Acquire knowledge carbohydrates, proteins and amino acids.

Topic wise distribution of periods

Sl. No.	Topics	Periods	Marks
1	Nomenclature	08	10
2.	Aliphatic Compounds	20	20
3.	Aromatic Compounds	09	15
4.	Carbohydrates, Proteins & fats	23	25
	Total	60	70

COURSE CONTENT

1.0 IUPAC NOMENCLATURE

- 1.1 scope of organic chemistry
- 1.2 Differentiate organic compound and inorganic compounds
- 1.3 Importance of organic Chemistry in modern life.
- 1.4 Basic concept of organic compound
 - (i) Bonding (covalent)
 - (ii) Isomerism
- 1.5 Classification organic compounds
- 1.6 IUPAC naming.

2.0 ALIPHATIC COMPOUNDS

- 2.1 Methods of preparations, properties and uses of CH₄ and C₂H₅.
- 2.2 Methods of preparations properties of ethylene.

- 2.3 Methods of preparation, properties and uses of acetylene.
- 2.4 Methods of preparation properties and uses of methanol and ethanol.
- 2.5 Absolute alcohol and denatured alcohol.
- 2.6 Methods of preparation properties and uses of Ester.
- 2.7 Methods of preparation properties and uses of Aldehyde.

3.0 AROMATIC COMPOUNDS

- 3.1 Methods of preparation, properties and uses of
 - (a) Benzene (b) Toluene
- 3.2 Benzene derivative compound
 - (a) Benzyl alcohol (b) Benzylaldehyde

4.0 CARBOHYDRATES, PROTEINS & FATS

- 4.1 Classification of carbohydrates
- 4.2 Synthesis and inter conversions of monosaccharide's
- 4.3 Manufacturing properties and uses of glucose, fructose, sucrose, and lactose.
- 4.4 Amino acid, Peptides and proteins
- 4.5 Classification of proteins & Fats
- 4.6 Properties and uses of proteins.
- 4.7 Properties and uses of fats.

LEARNING RESOURCES:

TEXT BOOKS

- 1.0 Advanced organic Chemistry by B.S. Bahl, Arun Bahl.

INTRODUCTION TO BIOTECHNOLOGY

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTT 304	Semester	3 RD
Total Period:	60	Examination	3 hrs
Theory periods:	4 P/W	Class Test:	20
Tutorial:		Teacher's Assessment:	10
Maximum marks:	100	End Semester Examination:	70

Rationale:

The term Biotechnology was coined during late 1970s when the advances in molecular and cell biology catalysed new industrial ventures to exploit these advances for the benefit of mankind. The European Federation of Bio-technology has defined Biotechnology as the integrated use of biochemistry, microbiology and engineering sciences in order to achieve technological or industrial application of capabilities of microorganisms. In simple terms, Biotechnology is the use of living organisms to make products of value of man. The use of term biotechnology may imply a single subject, but the essence of biotech is its multi disciplinary nature. Biotechnology has involved from integrated use of life sciences, chemical sciences and engineering sciences.

Objective:

After completion of the study of Introduction to Biotechnology the student will be able to:

1. know about biotechnology and its relation to society and mankind.
2. know about different branches of biotechnology and their utility to improve the life style.
3. know about different discoveries related to biotechnology and their application to improve the mankind.
4. know about the medicines and antibiotics produced by manipulation and application of some bio-technological processes.

Topic wise distribution of periods

Sl. No.	Topics	Periods	Marks
1	Biotechnology	10	10
2.	Genetics and Biotechnology	15	15
3.	Bioprocess and Fermentation Technology	10	10
5.	Environmental Biotechnology	15	15
6.	Animal Biotechnology	10	20
	Total	60	70

1.0 BIOTECHNOLOGY

- 1.1 Concept of Biotechnology
- 1.2 Different disciplinary of biotechnology
- 1.3 lists out some applications of biotechnology

2.0 GENETICS AND BIOTECHNOLOGY

- 2.1 An outline of rDNA technology
- 2.2 Protoplast and cell fusion techniques
- 2.3 PCR Technology

3.0 BIOPROCESS AND FERMENTATION TECHNOLOGY

- 3.1 Concept of Bioreactor. Difference between bioreactor and fermenter
- 3.2 Different types of Bioreactor
- 3.3 Principal of microbial growth and culture system
- 3.4 Media design for fermentation process
- 3.5 Types of fermentation processes
- 3.6 Scale-up

4.0 ENVIRONMENTAL BIOTECHNOLOGY:

- 4.1 Environmental biotechnology
- 4.2 Different sources and nature of environmental pollution?
- 4.3 Different measurement and monitoring for pollution
- 4.4 Classification of waste water treatment
- 4.5 Xenobiotic
- 4.6 Bioremediation and its types

5.0 ANIMAL BIOTECHNOLOGY

- 5.1 Main terminology in cell culture
- 5.2 Minimal requirements for animal cell culture
- 5.3 Media composition of animal cell culture
- 5.4 Some examples of transgenic animals (like Dolly)
- 5.5 Some application of animal cell culture

LEARNING RESOURCES:

Text books:

1. Biotechnology:U.Satyanarayan
2. Biotechnology, an expanding horizon:B.D.Singh
3. Biotechnology: Demystifying the concept- D. Bourgaize, T.R.Jewell & R.G.Buiser (Pearson Education Publ.)
4. Understanding Biotechnology – A.Borem,F.R.Sautaos & D.E.Bower (Pearson Education Publ.)

CELL BIOLOGY

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTT 305	Semester	3 RD
Total Period:	60	Examination	3 hrs
Theory periods:	3 P/W	Class Test:	20
Tutorial:	1 P/W	Teacher's Assessment:	10
Maximum marks:	100	End Semester Examination:	70

Rationale:

All animals and plants consist of certain structural units called cells. Living things therefore can be defined as those objects, which are composed of cells capable of reproduction. In recent years, large number of sub-cellular structures have been discovered and studied in detail. Consequently, it may appear that cell is no longer a basic unit of life, because life may exist without cells also. It should however be realised that the importance of the atomic theory in physics and chemistry did not decrease with the discovery of smaller particles like protons, neutrons and electrons.

Objective:

After completion of the study of Cell Biology the student will be able to know:

1. about the cell structure and functions related to physiology.
2. about the physical and chemical nature of cell and their effect on cellular functions.
3. about the typical characteristics and functioning of cell which enables it to regulate different physio chemical and biochemical process.
4. about the controlled and uncontrolled growth of cell and their effect on human life and physiology.

Topic wise distribution of periods

Sl. No.	Topics	Periods	Marks
1	Cell Structure	20	10
2.	Cell growth and Division	10	25
3.	The Cytoskeleton	10	10
5.	Chemical signaling between cells	20	25
	Total	60	70

COURSE CONTENT:

1.0 CELL STRUCTURE

- 1.1 Introduction to cell Biology.
- 1.2 Detail structure & function of Bacterial cell.
- 1.3 Structure and function of Chromosome.

2.0 CELL GROWTH AND DIVISION

- 2.1 Cell cycle: phases of cell cycle

- 2.2 Mitosis and Meiosis.
- 2.3 Regulation of cell cycle.
- 2.4 Example of Regulators in cell cycle: cyclin and cyclin dependent kinases.

3.0 THE CYTOSKELETON

- 3.1 Muscle contraction.
- 3.2 Contractile assemblies of Actin and Myosin in non muscle cells.
- 3.3 Structure and function of cilia and flagella.

4.0 CELL SIGNALLING

- 4.1 The extracellular matrix.
- 4.2 Different strategies of chemical signaling.
- 4.3 Function of cell surface receptors
- 4.4 G protein coupled receptor
- 4.5 Receptor protein Tyrosine Kinase.
- 4.6 Role of CAMP as second messengers.

LEARNING RESOURCES:

TEXT BOOK:

1. The cell a molecular approach : Geottrey M. Copper

Reference Text Book:

1. Cell Biology by C.B Power

BASIC LIFE SCIENCE LABORATORY

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTP 301	Semester	3 rd
Total Period:	45	Examination	4 hrs
Lab. periods:	3 P/W	Term Work	25
Maximum marks:	25	End Semester Examination:	00

List of experiments:

Sr. No	Name Of Experiments	No of Periods
1	Study of Simple microscope	06
2	Study of compound microscope	06
3	Study of different parts of angiosperm plant	06
4	Study of different parts of flower	06
5	Study of transverse section of root	06
6	Study of transverse section of leaf	06
7	Demonstration of transpiration in plants	09

ELEMENTS OF CHEMISTRY- I LABORATORY

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTP 302	Semester	3 rd
Total Period:	45	Examination	4 hrs
Lab. periods:	3 P/W	Term Work	25
Maximum marks:	50	End Semester Examination:	25

LIST OF EXPERIMENTS:

Sr No	Name Of Experiment	No of Periods
1	Determine the viscosity of a liquid by Red wood viscometer at different temperatures and plotting graph between viscosity and temperature.	05
2	To determine the partition coefficient of iodine between water and carbon tetrachloride.	05
3	To determine the partition coefficient of benzoic acid between water and benzene at room temperature and molecular state of Benzoic acid in benzene as compared to its solution in water.	05
4	To prepare colloidal solution of starch.	05
5	To prepare colloidal solution of egg albumin.	05
6	To study the dialysis of starch sol containing sodium chloride through a cellophane or parchment paper.	05
7	To determine the adsorption isotherm of acetic acid by activated charcoal.	05
8	To investigate the adsorption of oxalic acid from aqueous solution of activated charcoal and examines the validity of Freundlich and Langmuir's adsorption isotherm.	05
9	To determine the value of rate constant (k) for the hydrolysis of ethyl acetate catalyzed by hydrochloric acid.	05

REFERENCE BOOKS

1. Physical Chemistry by Dr. Sudharani
1. Advanced Practical Physical Chemistry by J.B.Yadav

**ELEMENTARY CHEMISTRY -II
LABORATORY**

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTP 303	Semester	3 rd
Total Period:	45	Examination	4 hrs
Lab. periods:	3 P/W	Term Work	25
Maximum marks:	50	End Semester Examination:	25

Sl. No.	List of Experiments		No. of Periods
1.	Detect the following elements in the organic compound		10
	i)	Nitrogen	
	ii)	Sulphur	
	iii)	Halogen	
2.	Determine different functional groups of		15
	i)	Acids	
	ii)	Alcohols	
	iii)	Aldehydes	
	iv)	Ketones	
	v)	Esters	
	vi)	Phenol	
	vii)	Amines	
	viii)	Nitro	
	ix)	Amide	
	x)	Carbohydrate	
3.	Systematic qualitative analysis of organic compound		10
		Carbohydrate, Fat, Amino acid	
4.	Prepare in Laboratory		10
	Anilline (ii) Phenophthalein (iii) Methyl Orange		

INTRODUCTION TO BIOTECHNOLOGY LABORATORY

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTP 304	Semester	3 rd
Total Period:	45	Examination	4 hrs
Lab. periods:	3 P/W	Term Work	25
Maximum marks:	25	End Semester Examination:	00

List of experiments:

Sl No	Name Of Experiment	No of Periods
1	Observe Basic instrumentation in biotechnology	03
2	To Conduct Protoplast isolation and fusion	06
3	To Demonstrate Structure of DNA	04
4	To Isolate DNA from Plant cell	06
5	To Quantify DNA by using spectrophotometer	06
6	Demonstrate PCR (Polymerase chain reaction)	03
7	Demonstrate Different types of Centrifugation	03
8	To perform Cell immobilization by using sodium alginate and calcium chloride	03
9	To Extract enzymes from milk	06
10	To analyze Enzyme kinetic of the given enzyme	05

CELL BIOLOGY LABORATORY

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTP 305	Semester	3 rd
Total Period:	45	Examination	4 hrs
Lab. periods:	3 P/W	Term Work	25
Maximum marks:	50	End Semester Examination:	25

List of experiments

Sl. No	Name of Experiment	No of Periods
1	Slide identification of different cells	06
2	Separation of plant pigments by paper Chromatography	06
3	Identification of Meiosis in onion root tip.	06
4	Identification of Meiosis stages in onion root tip.	06
5	Preparation of blood smear.	06
6	Identify constituents of blood.	05
7	Isolation of genomic DNA from bacteria.	05
8	Isolation of plasmid DNA from bacteria.	05

TECHNICAL SEMINAR

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTP 306	Semester	3 rd
Total Period:	30	Examination	4 hrs
Lab. periods:	2 P/W	Term Work	25
Maximum marks:	25	End Semester Examination:	00

COURSE CONTENT:

- 1.0 Classes should be divided into smaller groups of not more than four in each group. One group should be assigned a topic for the Seminar. The topic should be usually related to their course of studies or should be of general interest. Every student of the group should prepare on a particular aspect of the main topic with active support and guidance from a teacher guide. The student should be encouraged to extensively use the library facilities and also to collect relevant material from different Technical magazines and journals. Each student should be usually asked to present his paper on the topic of the Seminar within 15 minutes after which a question answer session may follow for 5 minutes. Sr. faculty member should preside over the Seminar and ensure its smooth conduct. The student should be encouraged to use Audio-Visual Aids and other modern teaching methods during presentation of the topics in the Seminar. The Chairman should give the valedictory address and offer suggestions for quality improvement of the Seminar. Each student should at least speak for a minimum of three times during the year.
- 2.0 The students should be encouraged to collect newspaper clippings and magazine cuttings on emerging technology to be displayed on the date of the seminar.
- 3.0 The Sessional records should be maintained and evaluated by a team of faculty members and the final marks awarded by the team.

SOFT SKILL LABORATORY-I

Name of the Course: Diploma in BIOTECHNOLOGY			
Course code:	BTP 307	Semester	3 rd
Total Period:	30	Examination	4 hrs
Lab. periods:	2 P/W	Term Work	25
Maximum marks:	25	End Semester Examination:	00

Rationale :

The demand for and reliance on soft skills is on increase due to constant change in work environment, customer driven market, information based on economy and globalization. Soft skills are not replacement for hard or technical skill. In fact they are complimentary to each other and served to unlock the potential of people blessed with hard skill. A chemical engineer will work in plants as process engineer, market the chemical product as marketing executive and in many other new areas which require soft skills. Therefore, knowledge of the soft skill, information about soft skill requirement and acquiring soft skills are essential for a student to deal with competition in job market and development in his professional career.

Objective:

On completion of Practice of Soft skill-1 the student should be able to:

1. Understand meaning of soft skill and importance of it in their life.
2. Identify the strength, weakness, opportunity and treat to self.
3. Develop a positive attitude
4. Understand the core value of life and improve perception
5. Develop the art of listening and art of reading
6. Learn about time management

Topic wise distribution of periods

Sl. No.	Topics	Periods
1	Concept of soft skill	02
2.	Self-discovery	04
3.	Developing positive attitude	04
4.	Art of listening	06
5.	Time management	04
6.	Art of reading	06
7.	Improving perception	02
8.	Forming of values	02
	Total	30

COURSE CONTENT:

Classes should be divided into smaller groups of not more than twenty in each group

1.0 Concept of Soft Skill

- 1.1 Importance of Soft skill
- 1.2 Identifying your soft skill
- 1.3 Improving your soft skill

Assignment- Write about your own soft skill, objective of your life, list of soft skill required for improvement.

2.0 Self Discovery and SWOT analysis

- 2.1 Importance of knowing yourself
- 2.2 Using SWOT analysis and its benefits

Assignment- Do SWOT analysis of self and discuss the result with the teacher.

3.0 Developing Positive Attitude

- 3.1 Attitude and behavior
- 3.2 Developing positive attitude and overcoming negative attitude

Assignment- Study the life story of two great personality from different areas like politics, film, music, writing ,scientist community, social sector, medicine, engineering, sports, arts and explain how positive attitude changed their life.

4.0 Art of Listening

- 4.1 Benefits of active listening
- 4.2 Tips for improvement in listening

Assignment- Practice test on listening and answering questions. Attend a seminar or guest lecturer, listen it carefully and note down the important points and prepare a report of the same.

5.0 Time Management

- 5.1 Realizing the value of time and secret of time management
- 5.2 Time management tips for students

Assignment- Plan your time management and discuss the result with the teacher.

6.0 Art of Reading

6.1 Tips for reading

6.2 Activities for improving reading rates

Assignment- Practice test on reading and answering questions. Read an article from a magazine and list the important points in 500 words.

7.0 Improving perception

7.1 Meaning and factor influencing perception

7.2 Improving perception

Assignment- Test your perception and discuss the result with the teacher.

8.0 Forming Values

8.1 Types of Value

8.2 Importance of value

Assignment- Group Discussion on the importance of moral value in our life.

Reference Book: Soft Skills- Dr K. Alex Second Edition, S. Chand Publication