

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

TEACHING AND EVALUATION SCHEME

DISCIPLINE: CHEMICAL ENGINEERING									SEMESTER: 5TH			
SL NO	SUBJECT CODE	SUBJECT	PERIODS			EVALUATION SCHEME						
			L	T	P	INTERNAL EXAM			END SEM EXAM	TERM WORK	PRACTICAL EXAM	TOTAL MARKS
						TA	CT	Total				
THEORY												
1.	BST -501	ENVIRONMENTAL STUDIES	5	-	-	10	20	30	70			100
2.	CHT 501	INSTRUMENTAL METHOD OF ANALYSIS	4	-	-	10	20	30	70			100
3.	CHT 502	MASS TRANSFER II	4	-	-	10	20	30	70			100
4.	CHT 503	ENERGY ENGINEERING	4	-	-	10	20	30	70			100
5.	CHT 504	CHEMICAL ENGINEERING THERMODYNAMICS	4	-	-	10	20	30	70			100
PRACTICAL/TERM WORK												
5.	CHP 501	CHEMICAL ANALYSIS LABORATORY	-	-	3					25	25	50
6.	CHP 502	MASS TRANSFER II LABORATORY	-	-	3					25	25	50
7.	CHP 503	ENERGY ENGINEERING LABORATORY	-	-	3					25	25	50
8	CHP 504	POLLUTION CONTROL LABORATORY	-	-	3					25	25	50
9	CHP 505	SOFT SKILL LABORATORY -3	-	-	2					25	-	25
10	CHP 506	INDUSTRIAL TRAINING & PROJECT WORK PART-1	-	-	4					25	-	25
GRAND TOTAL			21	-	18	50	100	150	350	150	100	750

Total Contact hours per week: 39

Abbreviations: L-Lecture, T-Tutorial, P-Practical, TA- Teacher's Assignment, CT- Class test

Minimum Pass Mark in each Theory Subject is 35% and in Practical subject is 50%

ENVIRONMENTAL STUDIES

(Common to all Branches of Engg.)

BST-501

Period/Week: 05

Total Marks: 100

Total Periods: 75

Theory End Exams: 70; CT (20) +IA (10)

Rationale:

Due to various aspects of human developments including the demand of different kinds of technological innovations, most people have been forgetting that, the Environment in which they are living is to be maintained under various living standards for the preservation of better health. The degradation of environment due to industrial growth is very much alarming due to environmental pollution beyond permissible limits in respect of air, water industrial waste, noise etc. Therefore, the subject of Environmental Studies to be learnt by every Engineering student in order to take care of the environmental aspect in each and every activity in the best possible manner.

OBJECTIVES:

After completion of study of environmental studies, the student will be able to:

1. Gather adequate knowledge of different pollutants, their sources and shall be aware of solid waste management systems and hazardous waste and their effects.
2. Develop awareness towards preservation of environment.

Unit 1: The Multidisciplinary nature of environmental studies

(04 periods)

Definition, scope and importance, Need for public awareness.

Unit 2: Natural Resources

(12 periods)

Renewable and non renewable resources:

- a) Natural resources and associated problems.
 - Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction mining, dams and their effects on forests and tribal people.
 - Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems.
 - Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources.
 - Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizers- pesticides problems, water logging, salinity, .
 - Energy Resources: Growing energy need, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
 - Land Resources: Land as a resource, land degradation, man induces land slides, soil erosion, and desertification.
- b) Role of individual in conservation of natural resources.
- c) Equitable use of resources for sustainable life styles.

Unit 3: Systems

(12 periods)

- Concept of an eco system.
- Structure and function of an eco system.
- Producers, consumers, decomposers.
- Energy flow in the eco systems.

- Ecological succession.
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following eco system:
- Forest ecosystem:
- Aquatic eco systems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit 4: Biodiversity and it's Conservation

(08 periods)

- Introduction-Definition: genetics, species and ecosystem diversity.
- Biogeographically classification of India.
- Value of biodiversity: consumptive use, productive use, social ethical, aesthetic and optin values.
- Biodiversity at global, national and local level.
- Threats to biodiversity: Habitats loss, poaching of wild life, man wildlife conflicts.

Unit 5: Environmental Pollution.

(18 periods)

Definition Causes, effects and control measures of:

- a) Air pollution.
- b) Water pollution.
- c) Soil pollution
- d) Marine pollution
- e) Noise pollution.
- f) Thermal pollution
- g) Nuclear hazards.

Solid waste Management: Causes, effects and control measures of urban and industrial wastes.

Role of an individual in prevention of pollution.

Disaster management: Floods, earth quake, cyclone and landslides.

Unit 6: Social issues and the Environment

(12 periods)

- Form unsustainable to sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, water shed management.
- Resettlement and rehabilitation of people; its problems nd concern.
- Environmental ethics: issue and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies.
- Air (prevention and control of pollution) Act.
- Water (prevention and control of pollution) Act.
- Public awareness.

Unit 7: Human population and the environment

(09 periods)

- Population growth and variation among nations.
- Population explosion- family welfare program.
- Environment and human health.

- Human rights.
- Value education
- Role of information technology in environment and human health.

Recommended Books:

1. Textbook of Environmental studies, Erach Bharucha, #UGC
2. Fundamental concepts in Environmental Studies, D.D. Mishra, S.Chand & Co-Ltd,
3. Text book of Environmental Studies by K.Raghavan Nambiar, SCITECH Publication Pvt. Ltd.
4. Environmental Engineering by V.M.Domkundwar- Dhanpat Rai & Co.
5. Environmental Engineering & Safety by B.K.Mohapatra.

INSTRUMENTAL METHOD OF ANALYSIS

L 4	T 0	P 0	Curriculum Ref. No. : CHT 501
Total Contact hours: 60 Theory : 60 hours Theory Exam. : 3 hours.		Total Marks: 100	End Exam.: 70 marks Class Test 20 marks Teacher's Assignment: 10 marks

OBJECTIVES:

After completion of INSTRUMENTAL METHOD OF ANALYSIS, the student will be able to

1. Understand the concepts of solvent extraction and its application.
2. Understand working principle of different chromatographic techniques used in industry.
3. Understand and apply the concept of pH measurement, spectroscopy, refractometry & polarimetry

Topic Wise Distribution of Periods

SL. No.	Topics	Period	Marks
1	Solvent Extraction Method	10	10
2	Chromatography	15	15
3	pH Measurement	05	10
4	Spectroscopy	15	15
5	Refractometry	05	10
6	Polarimetry	10	10
	Total	60	70

Chapter – 1 SOLVENT EXTRACTION METHODS

- 1.1 Introduction, Distribution coefficient
- 1.2 Completeness of extraction
- 1.3 Selectivity of extraction
- 1.4 Concentration range and Recovery of extracted material
- 1.5 Factors favouring solvent extraction.
- 1.6 Factors affecting extraction
- 1.7 Experimental methods in extraction
- 1.8 Application of solvent extraction

Chapter – 2 CHROMATOGRAPHY

- 2.1 Introduction to the concept of chromatography
- 2.2 Classification of chromatography
- 2.3 Theory of paper chromatography
- 2.4 Techniques in paper chromatography
- 2.5 Theory and application of thin layer chromatography.
- 2.6 Theory and application of gas chromatography

Chapter – 3 pH MEASUREMENT

- 3.1 Concept of pH
- 3.2 Different methods of pH measurement
- 3.3 Construction and operation of pH meter
- 3.4 Colourimetric determination of pH

Chapter – 4 SPECTROSCOPY

- 4.1 Nature of radiant energy and electromagnetic spectrum, absorption and emission
- 4.2 Fundamental laws of absorption
- 4.3 Theory, instrumentation and application of visible & UV spectroscopy

Chapter – 5 REFRACTOMETRY

- 5.1 Theory of Refractometry
- 5.2 Construction and operation of refractometer
- 5.3 Application of refractometry

Chapter – 6 POLAROMETRY

- 6.1 Theory of polarimetry
- 6.2 Measurement of optical activity
- 6.3 Application of Polarimetry

Books:

- 1. Instrumental Approach to Chemical Analysis: A. K. Srivastava S. Chand Publication

MASS TRANSFER – II

L 4	T 0	P 0		Curriculum Ref. No. : CHT 502
Total Contact hours: 60 Theory : 60 hours Theory Exam. : 3 hours.			Total Marks: 100	End Exam.: 70 marks Class Test 20 marks Teacher's Assignment: 10 marks

OBJECTIVES:

After completion of MASS TRANSFER-II Chemical, the student will be able to

1. Understand the concepts of mass transfer operations like humidification, drying, extraction and crystallization and membrane separation.
2. Understand working principle of various mass transfer equipment used in industry.
3. Solve simple problems of mass transfer

Topic Wise Distribution of Periods

SL. No.	Topics	Period	Marks
1	Humidification Dehumidification	15	15
2	Drying	15	15
3	Extraction	15	20
4	Crystallization	15	20
	Total	60	70

Chapter – 1 Humidification and Dehumidification

- 1.9 Wet and dry bulb temperature
- 1.10 The principle of wet blub temperature theory
- 1.11 Illustrate humidity chart and explain different methods of measurement of Humidity
- 1.12 Different methods of humidification and dehumidification
- 1.13 The construction and working of natural and mechanical draft cooling tower.
- 1.14 Solve simple problems

Chapter – 2 Drying

- 2.7 Define drying
- 2.8 Moisture content-equilibrium, unbound, free moisture
- 2.9 The methods of removing liquids from solids
- 2.10 Illustrate constant rate and falling rate period (simple problems)
- 2.11 The construction and working principle of tray dryer, rotary dryer, spray dryer, tunnel dryer, flash dryer, fluidized bed dryer, dryer for heat sensitive materials.
- 2.12 Solve simple problems

Chapter – 3 Extraction

- 3.5 Liquid extraction and leaching
- 3.6 Different types of extraction
- 3.7 The principle of solid liquid extraction
- 3.8 Batch and continuous leaching
- 3.9 The principal of liquid-liquid extraction
- 3.10 Ternary-liquid equilibrium
- 3.11 The parameter in choice of solvent for liquid-liquid extraction

3.12 Construction and working principle of liquid-liquid extraction equipment and solid liquid extraction equipment

3.13 Solve simple problems

Chapter – 4 Crystallization

4.1 Define crystallization

4.2 Principle of crystallization

4.3 Construction and working of different types of batch and continuous crystallizer

4.4 Solve simple problems

Books:

1. Unit operation of chemical engineering: W.L. Mc CABE & J.M. SMITH.

2. Introduction chemical engineering: BADGERO & BNCHERO.

3. Chemical engineering vol.1: RICHARDSON & COULSON.

4. Mass transfer operation: TREYBAL.

ENERGY ENGINEERING

L 4	T 0	P 0	Curriculum Ref. No. : CHT 503
Total Contact hours: 60 Theory : 60 hours Theory Exam. : 3 hours.		Total Marks: 100	End Exam.: 70 marks Class Test 20 marks Teacher's Assignment: 10 marks

Rationale :

Gradual depletion of fossil fuel makes everyone aware of the probable energy crisis in year to come, which is creating awareness about energy conservation in every walk of life. Fuels not only supply energy but also provide basic raw materials for a most of vital industries. It is therefore, understandable why much greater stress should be laid on the knowledge of fuels and different types of furnaces for the benefit of chemical engineering students as compared to those of other branches of engineering.

Objective :

After completion of study of ENERGY ENGINEERING the student will be able to:

- (i) Understand nature and types of solid fuels, origin, chemical composition of coal, calorific value and classification, carbonization and storage of coal,
- (ii) Understand liquid fuels: origin and composition of crude oil, distillation and its products cracking and reforming
- (iii) Understand various types of gaseous fuels, combustion of fuel and elementary principle of combustion etc.

Topic wise distribution of periods

Sl. No.	Topics	Periods	Marks
1	Solid fuel	15	10
2.	Liquid fuel	10	10
3.	Gases fuel	10	10
4.	Synthetic fuel	05	05
5.	Nuclear energy and other non conventional sources of energy	05	05
6.	Combustion	05	10
7.	Furnaces	05	10
8	Energy Conservation	05	10
Total		60	70

COURSE CONTENTS:

CHAPTER – I SOLID FUEL

- 1.1 Origin of coal
- 1.2 Chemical composition of coal, characteristic and use of coal
- 1.3 Calorific values, testing of coal
- 1.4 Washing of coal
- 1.5 Classify carbonization of coal

- 1.6 Manufacture and properties of metallurgical coke, by product recovery and uses of products
- 1.7 Different methods of storage of coal, selection of coal
- 1.8 Compare solid, liquid and gaseous fuel

CHAPTER – II LIQUID FUEL

- 2.1 Origin and composition of crude oil, classification of petroleum
- 2.2 Crude oil distillation and its products
- 2.3 Properties and uses of gasoline, kerosene, diesel oil, fuel oil and naphtha
- 2.4 Cracking and reforming(Elementary idea)
- 2.5 Storage and handling of liquid fuel

CHAPTER-III GASEOUS FUEL

- 3.1 Manufacture, properties, composition and uses of the followings:
 - (i) Natural gas
 - (ii) Coke oven gas, Blast furnace gas
 - (iii) LPG, Refinery gas
 - (iv) Producer gas, water gas

CHAPTER – IV SYNTHETIC FUEL

- 4.1 Hydrogenation of coal
- 4.2 Fisher-tropsch synthesis, Bergius synthesis

CHAPTER – V NON CONVENTIONAL ENERGY

- 5.1 Different non conventional energy sources
- 5.2 Solar energy, tidal energy, wind energy, geothermal energy and their uses
- 5.3 Bio gas, its production and uses

CHAPTER – VI COMBUSTION

- 6.1 Principles of combustion processes and reactions
- 6.2 Discuss different parameter in combustion
- 6.3 Illustrate some simple combustion calculation.

CHAPTER – VII FUEL & KILN

- 7.1 Classify furnaces and kilns.
- 7.2 Different types of kilns and furnaces used in process industries
- 7.3 Waste heat recovery systems, recuperator, and regenerator.

CHAPTER – VIII ENERGY CONSERVATION

- 8.1 Principle of Energy conservation, energy audit.
- 8.2 Energy conservation approach/Technologies
- 8.3 Co generation and waste heat utilization.
- 8.4 Heat recurepactors and heat regenerator

Reference Books :

- 1. Elements of fuels and furnaces: O. P. Gupta and Sharma
- 2. Fuels and petroleum processing: B.K. Sharma
- 3. Non Conventional Energy source: G. D .Rai

CHEMICAL ENGINEERING THERMODYNAMICS

L 4	T 0	P 0		Curriculum Ref. No. : CHT 504
Total Contact hours: 60 Theory : 60 hours Theory Exam. : 3 hours.			Total Marks: 100	End Exam.: 70 marks Class Test 20 marks Teacher's Assignment: 10 marks

Rationale:

Thermodynamics, as the name indicates, is concerned with the flow of heat and it deals with energy charges accompanying all types' physical and chemical processes. The principle of Chemical Engineering thermodynamics will help in process design and analysis for arriving at optimum economic results. Therefore, knowledge of laws of thermodynamics, P-V-T- Relationship of gas is necessary for the success of chemical engineers.

OBJECTIVES:

- After completion of study of Chemical Engineering Thermodynamics, the student will be able to
1. Understand concept of system and surrounding, application of different laws of thermodynamics, their application and feasibility in a chemical reaction.
 2. Understand the phase of a system, thermodynamics of water system and critical phenomena and liquefaction of gases.

Topic Wise Distribution of Periods

Sl. No.	Topics	Period	Marks
1	Introduction & Basic Concept	10	10
2	First law of thermodynamics	13	10
3	P-V-T Behavior & Heat Effect	14	20
4	Second Law of Thermodynamic	13	15
5	Thermodynamic Properties of pure fluid	10	15
	Total	60	70

CHAPTER-1 INTRODUCTION AND BASIC CONCEPTS

- 1.1 Scope and limitations of Thermodynamics.
- 1.2 System, processes, state, properties, and path function, heat and work.
- 1.3 Equilibrium state and phases.
- 1.4 Zeroth law of Thermodynamics.
- 1.5 The concept of heat reservoir, heat engine, and heat pump.
- 1.6 Reversible and irreversible process.
- 1.7 Solve simple problems.

CHAPTER-2 FIRST LAW OF THERMODYNAMICS

- 2.1 State and explain first law of Thermodynamics.
- 2.2 Concept of internal energy, Enthalpy, heat capacity.
- 2.3 First law of thermodynamics for cyclic process, non-flow process, and flow process.
- 2.4 Solve numerical on application of 1ST law of thermodynamics.

CHAPTER-3 P-V-T BEHAVIOUR AND HEAT EFFECT.

- 3.1. P-V-T behavior of pure fluid.
- 3.2. Equation of state and ideal gas.
- 3.3. Constant volume process, constant pressure process, constant temperature process, adiabatic process, polytropic process for ideal gases.

CHAPTER-4 SECOND & THIRD LAW OF THERMODYNAMICS AND APPLICATION.

- 4.1. State and explain second law of thermodynamics.
- 4.2. Concept of entropy.
- 4.3. Calculate change of entropy for various conditions.
- 4.4. Third law of Thermodynamics.

CHAPTER-5 THERMODYNAMIC PROPERTIES OF PURE FLUIDS.

- 5.1. Classify thermodynamic properties.
- 5.2. Work function and Gibb's free energy and Gibb's phase rule.
- 5.3. Various relationships among thermodynamic properties – maxwell equation, clapeyron equation, entropy-heat capacity relation, differential equation for entropy, effect of temperature, pressure and volume on U,H and S, relationship between C_p and C_v .
- 5.4. Gibb's-Helmholtz equation.
- 5.5. Fugacity co-efficient, effect of temperature and pressure on fugacity, of pure gases, solids and liquids.
- 5.6. Concept of activity.
- 5.7. Concept of Refrigeration and liquefaction process.

TEXT BOOK :

1. Introduction to chemical Engineering Thermodynamics. -Smith and van Ness

REFERENCE BOOK:

1. A text book of chemical engineering Thermodynamics: – K.V. Narayanan, PHI
2. Chemical Engineering Thermodynamics:- Sandler, John Wiley.

CHEMICAL ANALYSIS LABORATORY

L 0	T 0	P 3		Curriculum Ref. No. : CHP-501
Total Contact hours : 45 Practical : 45 hours			Total Marks : 50	Practical Exam. : 4 hours Practical Exam. :25 marks Sessional: 25 marks

Experiment Wise Distribution of Periods

SL. No.	Experiment	Periods
1	Separation of Iron using solvent extraction technique	03
2	Separation of Nickel as metal chelate using solvent extraction technique	03
3	Determine pH and conductivity of a given solution by pH-meter	06
4	Determine the concentration of sugar in sugar solution by Polarimeter	06
5	Determine the refractive index of different liquids by Abbe's Refractometer	03
6	To determine a) Maximum wavelength of a solution of cobalt chloride b) Verify Beer's Law and apply it to find the concentration of the given unknown solution by Spectrophotometer	06
7	Demonstrate operation of a flame photometer	03
8	Demonstrate operation of a Calorimeter	03
9	To determine ferrous ions in a given sample spectrophotometrically	06
10	To verify Beer's law of solution of KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$ using calorimeter	06
Total		45

MASS TRANSFER-II LABORATORY

L 0	T 0	P 3	Curriculum Ref. No. : CHP-502
Total Contact hours : 45 Practical : 45 hours		Total Marks : 50	Practical Exam. : 4 hours Practical Exam. :25 marks Sessional: 25 marks

Experiment Wise Distribution of Periods

SL. No.	Experiment	Periods
1	A) Demonstrate operation of a Cooling Tower B) To determine humidity, humid volume, humid heat, percentage of humidity by psychometric method.	06
2	A) Demonstrate operation of the wetted wall column B) Determine Psychometric parameter of outlet air	03
3	A) Demonstrate operation of a tray dryer (Vacuum / Atmospheric type) B) Plot the rate of drying curve for a given sample of wet solid	06
4	Demonstrate operation of a Fluidized bed dryer	03
5	A) Demonstrate operation of an open pan crystallizer B) Find the yield of crystal from a given solution	06
6	A) Demonstrate operation of Swanson Walker Crystallizer B) Determine the efficiency of equipment	06
7	A) Demonstrate operation of liquid-liquid extractor B) Separate a solution into its component by using liquid-liquid extraction method C) Demonstrate operation of a solid-liquid extractor	06
8	Demonstrate operation of spray tower	03
9	To determine the partition coefficient of Iodine between water and carbon tetrachloride	03
10	To determine the solubility of a given salt at room temperature and also draw its solubility curve	03
Total		45

ENERGY ENGINEERING LABORATORY

L 0	T 0	P 3		Curriculum Ref. No. : CHP-503
Total Contact hours : 45 Practical : 45 hours			Total Marks : 50	Practical Exam. : 4 hours Practical Exam. :25 marks Sessional: 25 marks

Sl. No.	List of Experiments	Periods
1.	Demonstrate operation of muffle furnace	3
2.	Carry out proximate analysis of coal	6
3.	Estimate calorific value of fuel by bomb calorimeter	6
4.	Determine sulphur content of a sample of coal	3
5.	Determine nitrogen content in the coal	6
6.	Determine density and specific gravity of different lubricating oil and liquid fuels	6
7.	Determine flash point of a liquid fuel by flash point apparatus	3
8.	Determine the cloud and pour point of a lubricating oil	3
9.	Determine aniline point of an oil	3
10.	Study Orsat gas analyser and conduct flue gas analysis	6

POLLUTION CONTROL LABORATORY

L 0	T 0	P 3	Curriculum Ref. No. : CHP-504
Total Contact hours : 45 Practical : 45 hours		Total Marks : 50	Practical Exam. : 4 hours Practical Exam. :25 marks Sessional: 25 marks

EXPERIMENT Wise Distribution of Periods

SR NO	EXPERIMENT	PERIODS
1	Collection of sample of waste water	04
2	Analyze a given sample of waste water for estimation of dissolved chloride	05
3	Determine the dissolved oxygen content of water by Winkler's method	04
4	Determine the chemical oxygen demand (BOD) exerted by a given sample of waste water	05
5	Determine the chemical oxygen demand (COD) of a given sample of waste water`	04
6	Determine the turbidity of a given sample of waste water	05
7	Determine the total dissolved solid in a given sample of waste water	04
8	Determine the optimum amount of Coagulant required to treat to turbid water	05
9	Determine the optimum amount of coagulant required to treat to turbid water	04
10	Determine the amount of sulphate in a given sample of water.	05

SOFT SKILL LABORATORY-III

L 0	T 0	P 2		Curriculum. Ref. No. : CHP-505
Total Contact hours. : 30 Practical : 30 hours		Total Marks : 25		Sessional: 25 marks

Rationale:

After learning the many important aspects of soft skill, interview skill which is part of soft skill techniques are included in this laboratory practice-III. Soft Skill also refer to abilities that make people better employees and open door for many opportunities, that are not directly related to the subject matter for their jobs. In other words, soft skill refer to a person's ability to relate to others, to get him/herself and others organized, to communicate in written, spoken or other form.

Objective:

On completion of Practice of Soft skill-3 the student should be able to:

1. Participate actively in Group Discussion.
2. Prepare his/her CV effectively.
3. Face interview confidently

Topic wise distribution of periods

Sl. No.	Topics	Periods
1	Group Discussion	08
2.	Preparing CV/Resume	04
3.	Interview Skills	18
	Total	30

COURSE CONTENT:

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

1.0 GROUP DISCUSSION

- 1.1 Meaning of Group Discussion
- 1.2 Character tested in Group Discussion
- 1.3 Tips on Group Discussion
- 1.4 Skills required in Group Discussion
- 1.5 Essential Elements of Group Discussion

Assignment- Practice of Group discussion and recording of GD. The recording will be shown to students for improvement of their skills.

2.0 PREPARING CV/RESUME

- 2.1 Meaning and difference among Biodata, CV and Resume
- 2.2 Purpose of CV writing
- 2.3 Types of Resumes, interesting facts about resume
- 2.4 Design of a CV

Assignment- Practice of CV writing and rectification by the teacher.

3.0 INTERVIEW SKILLS

3.1 Types of Interview

3.2 Preparation and skill required for facing interview

3.3 Dress code in interview

3.4 Telephonic interview

Assignment- Mock interview practice with proper dress code.

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

INDUSTRIAL TRAINING AND PROJECT WORK-I

L 0	T 0	P 4		Curriculum Ref. No. : CHP-506
Total Contact hours. : 60 Practical : 60 hours			Total Marks : 25	Sessional: 25 marks

The students are required to carry out one of the following projects:

1. Processes based Project: Manufacture of product.
2. Equipment based Project: Detailed design and fabrication of the equipment for a given capacity.
3. Experimental based Project: Experimental investigation of basic or applied research problem.
4. Industrial Problems: Any problem or project directly related to existing plants for modification of process or equipment or regarding pollution control and energy conservation under the guidance of a staff member and /or staff members and submit a typed report in duplicate.
5. Research Oriented: Any application/renovation/modification of a latest technology

The Project Work is a minor one in which the students work out on the main project topic in a that is collection of literature, study of the various processes selection of the process, computation of material, plant location & layout cost Estimation as applicable to the individual problem.

This mini project helps the students to know the level of work to be done in the main project. They will collect the materials, do analysis on the topic etc.

The objective of the mini project is to make use of the knowledge gained by the student at various stages of the DIPLOMA course. This helps to judge the level of proficiency, originality and capacity for application of the knowledge attained by the student at the end of the course. Each group should consist of maximum 10 students. For term-work (Internal) 25marks, the assessment should be by conducting frequent written tests, seminars during the semester & an oral examination at the end of the semester conducted by all the staff members of the department. The Head of the Department should see that the assessment procedure should be the same for all the students of the class. For external 50 marks, the project work shall be assessed by an oral examination to be held by at last two examiners, one internal and one must by external at the end of the semester.

The objective of the VIVA VOCE examination (Internal and External Orals) is to determine whether the objectives of the project work have been met by the student as well as to assess the originality and initiative of the student as demonstrated in the project work.