**CHEMICAL ENGINEERING DEPARTMENT LESSON PLAN (2024-25)**

| Discipline :- **CHEMICAL** | Semester:-**5th** | Name of the Teaching Faculty **Satya Sankar Raj** |
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| Subject:- **Entrepreneurship And Management & Smart Technology**<br>Course Code : **TH 1** | No of Days/per Week Class **Allotted :-04** | Semester From:-1ST July 2024 To:-8TH November 2024 |
| **Week** | **Class Day** | **Theory/ Practical Topics** |
| 1st | 1st | **Chapter 1: Entrepreneurship**<br>Concept /Meaning of Entrepreneurship |
| | 2nd | Need of Entrepreneurship |
| | 3rd | Characteristics, Qualities and Types of entrepreneur, |
| | 4th | Entrepreneur's vs. Manager |
| 2nd | 1st | Forms of Business Ownership: Sole proprietorship, partnership forms and others |
| | 2nd | Types of Industries, Concept of Start-ups |
| | 3rd | Entrepreneurial support agencies at National, State, District Level( Sources): DIC, NSIC,OSIC, SIDBI, NABARD, Commercial Banks, KVIC etc. |
| | 4th | Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks |
| 3rd | 1st | Functions and Barriers in entrepreneurship |
| | 2nd | **Chapter 2: Market Survey and Opportunity Identification (Business Planning)**<br>Business Planning |
| | 3rd | SSI, Ancillary Units, Tiny Units, Service sector Units |
| | 4th | Time schedule Plan, Agencies to be contacted for Project Implementation |
| 4th | 1st | Assessment of Demand and supply and Potential areas of Growth |
| | 2nd | Identifying Business Opportunity |
| | 3rd | Final Product selection |
| | 4th | **Chapter 3: Project report Preparation**<br>Preliminary project report |
| 5th | 1st | Detailed project report, |
| | 2nd | Techno economic Feasibility |
| | 3rd | Project Viability |
| | 4th | **Chapter 4: Management Principles**<br>Definitions of management |
| 6th | 1st | Principles of management |

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| | 2nd | Functions of management (planning, organising, staffing, directing and controlling etc.) |
| | 3rd | Level of Management in an Organisation |
| | 4th | **Chapter 5: Functional Areas of Management**<br>Production management:<br>Functions, Activities |
| 7th | 1st | Productivity<br>Quality control<br>Production Planning and control |
| | 2nd | Inventory Management |
| | 3rd | Need for Inventory management |
| | 4th | Models/Techniques of Inventory management |
| 8th | 1st | Financial Management |
| | 2nd | Functions of Financial management |
| | 3rd | Management of Working capital, Costing (only concept) |
| | 4th | Break even Analysis |
| 9th | 1st | Brief idea about Accounting Terminologies: Book Keeping, Journal entry |
| | 2nd | Marketing Management, Concept of Marketing and Marketing Management |
| | 3rd | Marketing Techniques, Concept of 4P s (Price, Place, Product, Promotion) |
| | 4th | Human Resource Management |
| 10th | 1st | Functions of Personnel Management |
| | 2nd | Manpower Planning, Recruitment, Sources of manpower, |
| | 3rd | Selection process, Method of Testing, Methods of Training & Development, Payment of Wages |
| | 4th | **Chapter 6: Leadership and Motivation**<br>Definition and Need/Importance |
| 11th | 1st | Qualities and functions of a leader, Manager Vs Leader |
| | 2nd | Style of Leadership (Autocratic, Democratic, Participative) |
| | 3rd | Definition and characteristics of motivation, Importance of motivation |
| | 4th | Factors affecting motivation, Theories of motivation (Maslow) |
| 12th | 1st | Methods of Improving Motivation |
| | 2nd | Importance of Communication in Business |
| | 3rd | Types and Barriers of Communication |
| | 4th | **Chapter 7: Work Culture, TQM & Safety**<br>Human relationship and Performance in Organization |
| 13th | 1st | Relations with Peers, Superiors and Subordinates |
| | 2nd | TQM concepts: Quality Policy, Quality Management, Quality system |
| | 3rd | Accidents and Safety, Cause, preventive measures, |
| | 4th | General Safety Rules , Personal Protection Equipment(PPE) |
| 14th | 1st | **Chapter 8: Legislation**<br>**Introduction** |
| | 2nd | Intellectual Property Rights(IPR), Patents, Trademarks, Copyrights |
| | 3rd | Features of Factories Act 1948 with Amendment (only salient points) |

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| | 4th | Features of Payment of Wages Act 1936 (only salient points |
| 15th | 1st | **Chapter 9: Smart Technology**<br>Concept of IOT, How IOT works |
| | 2nd | Components of IOT, Characteristics of IOT, |
| | 3rd | Categories of IOT |
| | 4th | Applications of IOT- Smart Cities, Smart Transportation, Smart Home, Smart Healthcare, Smart Industry, Smart Agriculture, Smart Energy Management etc |

| LESSON PLAN OF 5th SEMESTER(2024-2025) CHEMICAL ENGINEERING DEPARTMENT | | |
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| **Discipline: Chemical** | **Semester: 5th** | **Name of the Teaching Faculty: Yayati Kishore Mohanta** |
| **Subject: Theory-2**<br><br>**Mass Transfer -2** | **No of Days per week class allotted:4** | **Semester From:-1ST July 2024 To:-8TH November 2024**<br>**No of Weeks :15** |
| **Week** | **Class days** | **Theory/ Practical Topic** |
| 1st | 1st | **Chapter – 1: Humidification and Dehumidification**<br>Introduction about humidification and dehumidification |
| | 2nd | Define temperature, wet bulb temperature and dry bulb temperature |
| | 3rd | The principle of wet blub temperature theory |
| | 4th | Illustrate humidity chart |
| 2nd | 1st | Different methods of measurement of Humidity |
| | 2nd | Practice to identify different lines, temperatures, humidity in humidity chart |
| | 3rd | Different methods of humidification |
| | 4th | Different methods of dehumidification |
| 3rd | 1st | The construction and working of natural cooling tower |
| | 2nd | The construction and working of mechanical draft cooling tower |
| | 3rd | Solve simple problems |
| | 4th | Revision of the chapter |
| 4th | 1st | Doubt clearing and practicing class |
| | 2nd | **Chapter – 2: Drying**<br>Introduction to drying |
| | 3rd | Types of Moisture content-equilibrium, unbound, free moisture |
| | 4th | Showing different types of moisture content in the graph |
| 5th | 1st | Concept of drying rate with graphical view |
| | 2nd | Practicing numerical |
| | 3rd | The methods of removing liquids from solids |
| | 4th | Illustrate constant rate and falling rate period |
| 6th | 1st | The construction and working principle of tray dryer |
| | 2nd | The construction and working principle of rotary dryer, spray dryer |
| | 3rd | The construction and working principle of tunnel dryer, flash dryer |
| | 4th | The construction and working principle of dryer fluidized bed dryer |

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| 7th | 1st | Dryer for heat sensitive materials |
| | 2nd | Solve simple problem |
| | 3rd | Solve simple problem |
| | 4th | Revision of the chapter |
| 8th | 1st | Practicing previous year questions |
| | 2nd | **Chapter – 3: Extraction**<br>Introduction to extraction |
| | 3rd | Liquid extraction and leaching |
| | 4th | Different types of extraction |
| 9th | 1st | Learning concentration on the triangular diagram |
| | 2nd | The principle of solid liquid extraction |
| | 3rd | Revision of the chapter |
| | 4th | Define Batch leaching with example |
| 10th | 1st | Continuous leaching operation |
| | 2nd | Construction and working of Solid-Liquid extraction equipment |
| | 3rd | Construction and working of Solid-Liquid extraction equipment |
| | 4th | The principal of liquid-liquid extraction |
| 11th | 1st | The parameter in choice of solvent for liquid-liquid extraction |
| | 2nd | Revision and doubt clearing class about the chapter |
| | 3rd | Practice questions based on the chapter |
| | 4th | Construction and working principle of liquid-liquid extraction equipment |
| 12th | 1st | Construction and working principle of solid liquid extraction equipment |
| | 2nd | Solve simple problems |
| | 3rd | Solve simple problems |
| | 4th | **Chapter – 4: Crystallization**<br>Introduction to crystallization |
| 13th | 1st | Principle of crystallization |
| | 2nd | Construction and working of different types of batch crystallizer |
| | 3rd | Construction and working of different types of continuous crystallizer |
| | 4th | Solve simple problems |
| 14th | 1st | Solve simple problems |
| | 2nd | Practice previous years question related to the chapter |
| | 3rd | Revision of the chapter-1 |

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| | 4th | Revision of the chapter-2 |
| 15th | 1st | Revision of the chapter-3 |
| | 2nd | Revision of the chapter-4 |
| | 3rd | Practice previous year questions |
| | 4th | Practice previous years questions |

**UCPES BERHAMPUR**

**CHEMICAL ENGINEERING DEPARTMENT**
**LESSON PLAN(2024-25)**

| Discipline :- **CHEMICAL** | Semester:-**5th** | Name of the Teaching Faculty: GF1 |
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| Subject:- **Chemical Process Industries – II**<br>Course Code : **TH 3** | No of Days/per Week Class **Allotted :-04** | Semester From:-1ST July 2024 To:-8TH November 2024 |
| **Week** | **Class Day** | **Theory/ Practical Topics** |
| 1st | 1st | **CHAPTER-1: PESTICIDES**<br>Introduction |
| | 2nd | Pesticides, Classification |
| | 3rd | Manufacture of DDT |
| | 4th | DDT flow sheet description & application |
| 2nd | 1st | **CHAPTER-2: PAINTS AND VARNISHES**<br>Introduction about paint, varnishes, lacquers, enamels and their components |
| | 2nd | Constituents of paints and their characteristics |
| | 3rd | Manufacturing process of paints and varnishes. |
| | 4th | Failure of paints |
| 3rd | 1st | Advance technologies in paint industries |
| | 2nd | **CHAPTER-3: EXPLOSIVES**<br>Introduction about explosives |
| | 3rd | Classification of different explosives |
| | 4th | Manufacture of cellulose nitrate |
| 4th | 1st | Broad application of cellulose nitrate |
| | 2nd | Manufacture nitroglycerine and dynamite |
| | 3rd | **CHAPTER-4: PLASTICS**<br>Introduction about plastics, types |
| | 4th | Differentiate between thermoplastic and thermosetting |
| 5th | 1st | Classification of plastics |
| | 2nd | Properties and manufacture of phenol formaldehyde and its application |
| | 3rd | Properties and manufacture of urea formaldehyde and its application |
| | 4th | Properties and Manufacture of polyethylene and its application |
| 6th | 1st | Properties and Manufacture of P.V.C and its application |
| | 2nd | **CHAPTER-5: SYNTHETIC FIBERS**<br>Introduction about fibre and its classification |
| | 3rd | Properties of polyamides |
| | 4th | Manufacture of Nylon and its application |
| 7th | 1st | Properties and Manufacture of Viscose rayon and its application |
| | 2nd | Properties and Manufacture of Cupro ammonium rayon and its application |

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| | 3rd | Properties and Manufacture of Acetate rayon and its application |
| | 4th | Properties and Manufacture of Polyester and its application |
| 8th | 1st | **CHAPTER-6: RUBBER**<br>Introduction about rubber and its classification |
| | 2nd | Vulcanization of rubber |
| | 3rd | Natural and synthetic rubber |
| | 4th | Manufacture of SBR and their properties |
| 9th | 1st | Manufacture of Nitrile rubber and their properties |
| | 2nd | **CHAPTER-7: SUGAR**<br>**Introduction** |
| | 3rd | Manufacture of sugar from sugarcane |
| | 4th | Manufacture of industrial alcohol and uses |
| 10th | 1st | Classification of alcoholic beverages |
| | 2nd | Properties of Alcohols |
| | 3rd | Manufacture of Beer |
| | 4th | Cont.. |
| 11th | 1st | **CHAPTER-8: OILS AND FATS**<br>Classify different types of oil |
| | 2nd | Manufacture of vegetable oil |
| | 3rd | Differentiate edible and essential oil |
| | 4th | Differentiate oil and fats |
| 12th | 1st | Hydrogenation of oil and application |
| | 2nd | Advance technologies in oil production |
| | 3rd | **CHAPTER-9: SOAPS AND DETERGENTS**<br>Introduction on soaps and detergent |
| | 4th | Differentiate between soap and detergent |
| 13th | 1st | Properties of surfactant |
| | 2nd | Cleaning action of soap |
| | 3rd | Types of soap |
| | 4th | Manufacture of soap and uses |
| 14th | 1st | Manufacture of detergent and uses |
| | 2nd | Industrial application of surfactants |
| | 3rd | **CHAPTER-10: PHARMACEUTICAL INDUSTRY**<br>Classification of pharmaceutical industry |
| | 4th | Major pharmaceutical industry in India |
| 15th | 1st | Pharmaceutical industry products |
| | 2nd | Properties and structure of penicillin |
| | 3rd | Manufacture of penicillin by fermentation |
| | 4th | Application of penicillin |

| LESSON PLAN OF 5TH SEMESTER(2024-25) CHEMICAL ENGINEERING | | |
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| **DISCIPLINE:** CHEMICAL | **Semester:-5TH** | **NAME OF THE TEACHING FACULTY** **GF1** |
| **SUBJECT:** CHEMICAL ENGINEERING THERMODYNAMICS | **No of days per Week Allotted : 04** | **Semester From:-1ST July 2024 To:-8TH November 2024 No of Weeks:- 15** |
| **Week** | **Class/ Day** | **Theory/ Practical Topics** |
| 1ST | 1st | Scope and limitations of Thermodynamics |
| | 2nd | System, surrounding and boundary |
| | 3rd | Different types of systems |
| | 4th | Processes, state, properties |
| 2ND | 1st | Path and State functions |
| | 2nd | Heat and Work |
| | 3rd | Equilibrium state and phases |
| | 4th | Zeroth law of Thermodynamics |
| 3rd | 1st | State and explain first law of Thermodynamics |
| | 2nd | State and explain first law of Thermodynamics |
| | 3rd | Concept of internal energy, Enthalpy, heat capacity |
| | 4th | Concept of internal energy, Enthalpy, heat capacity |
| 4th | 1st | First law of thermodynamics for cyclic process, non-flow process, and flow process |
| | 2nd | First law of thermodynamics for cyclic process, non-flow process, and flow process |
| | 3rd | First law of thermodynamics for cyclic process, non-flow process, and flow process |
| | 4th | Solve numerical on application of 1ST lawof thermodynamics |
| 5th | 1st | Solve numerical on application of 1ST lawof thermodynamics |
| | 2nd | Constant volume process for ideal gases |
| | 3rd | Constant pressure process for ideal gases |
| | 4th | Constant temperature process for ideal gases |
| 6th | 1st | Adiabatic process for ideal gases |
| | 2nd | Polytrophic process for ideal gases |
| | 3rd | Solve simple problems |
| | 4th | Solve simple problems |
| 7th | 1st | Solve simple problems |

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| | 2nd | Equation of state and ideal gas |
| | 3rd | P-V-T behavior of pure fluid |
| | 4th | P-V-T behavior of pure fluid |
| 8th | 1st | Concept of heat reservoir, heat engine, andheat pump |
| | 2nd | Concept of heat reservoir, heat engine, andheat pump |
| | 3rd | State and explain second law of thermodynamics |
| | 4th | Concept of entropy |
| 9th | 1st | Concept of entropy |
| | 2nd | Calculate change of entropy for various conditions |
| | 3rd | Calculate change of entropy for various conditions |
| | 4th | Calculate change of entropy for various conditions |
| 10th | 1st | Third law of Thermodynamics |
| | 2nd | Solve simple problems |
| | 3rd | Solve simple problems |
| | 4th | Classify thermodynamic properties |
| 11th | 1st | Work function and Gibb's free energ |
| | 2nd | Work function and Gibb's free energ |
| | 3rd | Gibb's phase rule |
| | 4th | Various relationships among thermodynamic properties |
| 12th | 1st | Maxwell equation |
| | 2nd | Maxwell equation |
| | 3rd | Clapeyron equation |
| | 4th | Entropy-heat capacity relation |
| 13th | 1st | Differential equation for entropy |
| | 2nd | Effect of temperature, pressure and volume on U,H and S, relationship between Cp andCv |
| | 3rd | Effect of temperature, pressure and volume on U,H and S, relationship between Cp andCv |
| | 4th | Gibb's-Helmholtz equation |
| 14TH | 1st | Fugacity co-efficient, effect of temperatureand pressure on fugacity, fugacity of pure gases, solids and liquids |
| | 2nd | Fugacity co-efficient, effect of temperatureand pressure on fugacity, fugacity of pure gases, solids and liquids |
| | 3rd | Concept of activity, Effect of pressure and temperature on activity |
| | 4th | Concept of activity, Effect of pressure and temperature on activity |

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| 15TH | 1st | Concept of Refrigeration and liquefaction process |
| | 2nd | Previous Year Questions discussion |
| | 3rd | Previous Year Questions discussion |
| | 4th | Objective Questions discussion |

| Discipline: Chemical | | Semester: 5th | Name of Faculty: Siddhibinayak Pradhan | |
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| Subject: Theory-5 Instrumentation & Chemical Analysis | | No of Days per week class allotted | Semester From:-1ST July 2024 To:-8TH November 2024<br>No of Week-15 | |
| Week | Class No | Class days | Chapter | Theory Topic |
| | | | **Chapter -1 Instrument** | |
| 1st | 1 | 1st | 1.1 | Introduction to instrumentation, Measurement, and its aim |
| | 2 | 2nd | 1.2 | Standards of measurements- International standard, basic standards |
| | 3 | 3rd | 1.3 | Functional elements of an instrument |
| | 4 | 4th | 1.4 | Performance characteristics of an instrument |
| 2nd | 5 | 1st | 1.5 | Errors in instrumentation, Sources, Units of measurement |
| | | | **Chapter -2Measurement of Characteristics** | |
| | 6 | 2nd | 2.1 | Viscosity measurement, Principle, capillary viscometer, Effux Cup viscometer |
| | 7 | 3rd | 2.1 | Redwood viscometer, falling sphere viscometer, Continuous viscometer |
| | 8 | 4th | 2.2 | Nature of radiant energy, Electromagnetic spectrum |
| 3rd | 9 | 1st | 2.2 | Phenomena related with energy: Absorption & Emission, Fluorescence |
| | 10 | 2nd | 2.2 | Type of Spectroscopy-Microwave, Ultraviolet and visible spectroscopy |
| | 11 | 3rd | 2.2 | Fundamental laws and working of a spectrometer, Colorimeter, applications |
| | 12 | 4th | 2.3 | Optical activity & polarimetry, Specific and molecular rotation |
| 4th | 13 | 1st | 2.3 | Working of polarimeter and application of polarimeter |
| | 14 | 2nd | 2.4 | Concept of refractometry, Snell's law, principle of refractometer |
| | 15 | 3rd | 2.4 | Measurement of refractive index by refractometer, application in Industry |
| | | | **Chapter -3pH and Conductivity Measurement** | |
| | 16 | 4th | 3.1 | pH measurement working principle |
| 5th | 17 | 1st | 3.1 | Construction of pH electrodes and its operation |
| | 18 | 2nd | 3.1 | Operation of pH meter, advantages, disadvantages, and applications |
| | 19 | 3rd | 3.2 | Principles of measurement of electrical conductivity |
| | 20 | 4th | 3.2 | Operation of Conductivity meter, advantages, disadvantages, and applications |
| 6th | | | **Chapter -4Temperature Measurement** | |
| | 21 | 1st | 4.1 | Different temperature scales and its interconversions |
| | 22 | 2nd | 4.1 | Basic fixed points, secondary fixed points |
| | 23 | 3rd | 4.2 | Methods of temperature measurement- principle and applications |
| | 24 | 4th | 4.3 | Measurements of temperature in liquid in glass thermometer |
| Week | Class No | Class days | Chapter | Theory Topic |
| 7th | 25 | 1st | 4.4 | Working of resistance thermometer, advantages, and disadvantages |

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| | 26 | 2nd | 4.4 | Thermocouples, material used in thermocouples and its advantages |
| | 27 | 3rd | 4.4 | Working of radiation pyrometer, advantages, disadvantages, and application |
| | 28 | 4th | 4.4 | Working of Optical pyrometer, advantages, disadvantages, and application |
| 8th | 29 | 1st | 4.4 | Fiber optics temperature measurement and ultrasonic thermometers |
| | 30 | 2nd | 4.4 | Calibration of thermometers, miscellaneous measurement techniques |
| | | | **Chapter -5Pressure Measurement** | |
| | 31 | 3rd | 5.1 | Different types of pressures, units, and interconversions |
| | 32 | 4th | 5.2 | Methods of pressure measurements |
| 9th | 33 | 1st | 5.3 | Elastic Pressure transducers, components in Bourdon tube Pressure Gauge |
| | 34 | 2nd | 5.3 | Adjustments in Bourdon tube Pressure Gauge, advantages, disadvantages |
| | 35 | 3rd | 5.3 | Diaphragm pressure transducers, advantages, disadvantages, and application |
| | 36 | 4th | 5.3 | Bellows type gauge advantages, disadvantages, and application |
| 10th | 37 | 1st | 5.3 | Measurement of vacuum-Capsule gauge, McLeod gauge-applications |
| | 38 | 2nd | 5.3 | Calibration of pressure measuring instrumentations |
| | 39 | 3rd | 5.4 | Maintenance of pressure measuring instruments-Inspection, care, and repair |
| | 40 | 4th | 5.4 | Troubleshooting of pressure measuring instruments. |
| | | | **Chapter -6Automatic Control** | |
| 11th | 41 | 1st | 6.1 | Automatic control system and explain the application with example. |
| | 42 | 2nd | 6.1 | Working of a heat exchanger Control system |
| | 43 | 3rd | 6.1 | Working of a liquid level tank Control system |
| | 44 | 4th | 6.2 | Elementary idea on transfer functions for a first order system & time constant |
| 12th | 45 | 1st | 6.2 | Block diagram and components of Process Control system |
| | 46 | 2nd | 6.2 | Function of sensors and transmitters, transfer function of a control system |
| | 47 | 3rd | 6.2 | Working of sensor transmitter combination |
| | 48 | 4th | 6.3 | Types of process control system, advantages, and disadvantages |
| 13th | 49 | 1st | 6.3 | Working of open loop control system with examples |
| | 50 | 2nd | 6.3 | Working of Closed loop control system with examples |
| | 51 | 3rd | 6.3 | Working of Feed Forward control system with examples |
| | 52 | 4th | 6.3 | Working of cascade control system with examples |
| 14th | 53 | 1st | 6.4 | Elementary idea about different types of automatic controllers. |
| | 54 | 2nd | 6.4 | Ratio control system, analog and digital control system |
| | 55 | 3rd | 6.5 | Application based control system- sequential control system, Numerical CS |
| | 56 | 4th | 6.5 | I,D,PI, PD,PID Pneumatic, Hydraulic and electronic controller |
| Week | Class No | Class days | Chapter | Theory Topic |
| 15th | 57 | 1st | 6.5 | Principle of PLC, computer Aided measurement and control |

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| | 58 | 2nd | 6.5 | PLC Architecture, PLC basic structure and programming |
| | 59 | 3rd | 6.5 | Role of computers in measurement and control |
| | 60 | 4th | 6.5 | Elements of computer aided measurement and control, architecture |

| Discipline: Chemical | | Semester: 5th | Name of Faculty: All faculty | |
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| Subject: Student Centric Activity | | No of Days per week class allotted-03 | Semester From:-1ST July 2024 To:-8TH November 2024<br>No of Week-15 | |
| Week | Class No | Class days | | |
| 1st | 1 | 1st | September 4th Week | Orientation Program and Mentor Mentee Meet |
| | 2 | 2nd | | |
| | 3 | 3rd | | |
| 2nd | 4 | 1st | October 2nd week | Poster Making on Emerging trends in different Chemical Industry/Energy Conservation/ |
| | 5 | 2nd | | |
| | 6 | 3rd | | |
| 3rd | 7 | 1st | October 3rd week | Seminar by Industry Expert- latest trend in Plastic Processing- ProprietorSree Plast Limited or Functioning of State Pollution Control Board- RO Regional Office OSPCB |
| | 8 | 2nd | | |
| | 9 | 3rd | | |
| 4th | 10 | 1st | October 4th week | Laboratory Maintenance- 1.Cleaning of equipment,2. Lubrication 3. Running of equipment 4.Removal of residue material 5.Pianting of parts, 6.Arranging glass ware, Chemicals 7. Minor maintenance of equipment |
| | 11 | 2nd | | |
| | 12 | 3rd | | |
| 5th | 13 | 1st | November 1st week | Creativity & Idea Presentation- |
| | 14 | 2nd | | |
| | 15 | 3rd | | |
| 6th | 16 | 1st | November 2nd week | Seminar by Industry Expert- Pharmaceutical Intermediate Processing-Dept of Pharmacy BU/ Roland Institute of pharmacy |
| | 17 | 2nd | | |
| | 18 | 3rd | | |
| 7th | 19 | 1st | November 4th week | Field Visit or Industry visit- JK paper/ Waste Treatment plant Mahuda/SreePlast limited |
| | 20 | 2nd | | |
| | 21 | 3rd | | |
| 8th | 22 | 1st | December 1st week | CV/ Interview preparation/Career Counseling Program |
| | 23 | 2nd | | |
| | 24 | 3rd | | |
| 9th | 25 | 1st | December 2nd week | Laboratory Maintenance-1.Cleaning of equipment,2. Lubrication 3. Running of equipment 4.Removal of residue material 5.Pianting of parts, 6.Arranging glass ware, Chemicals 7. Minor maintenance of equipment |
| | 26 | 2nd | | |
| | 27 | 3rd | | |
| 10th | 28-30 | 1st - 3rd | December 3rd week | Seminar by Industry Expert- From IISER/ CoE BU in the latest area ofresearch |

**LESSON PLAN OF CHEMICAL ENGINEERING**
**DEPARTMENT WINTER 2024**

| Discipline: Chemical | Semester: 5th | Name of Faculty: Siddhibinayak Pradhan |
|---|---|---|
| Subject: Practical-1 Instrumentation Laboratory | No of periods per week allotted:6 | Semester From:-1ST July 2024 To:-8TH November 2024 |
| Week | Experiment | Experiment Topic |
| 1st | 1 | Separation of Iron using solvent extraction technique |
| 2nd | 2 | Determine pH and conductivity of a given solution by pH-meter |
| 3rd | 2 | Determine pH and conductivity of a given solution by pH-meter |
| 4th | 3 | Determine the concentration of sugar in sugar solution by Polarimeter |
| 5th | 3 | Determine the concentration of sugar in sugar solution by Polarimeter |
| 6th | 4 | Determine the refractive index of different liquids by Abbe's Refractometer |
| 7th | 4 | Determine the refractive index of different liquids by Abbe's Refractometer |
| 8th | 5 | To determine Maximum wavelength of a solution of cobalt chloride |
| 9th | 5 | Verify Beer's Law and apply it to find the concentration of the given unknown solution by Spectrophotometer |
| 10th | 6 | To verify Beer's law of solution of KMnO4 and K2Cr2O7 using calorimeter |
| 11th | 7 | Demonstrate different types of pressure gauges and temperature measuring device |
| 12th | 8 | Determine the viscosity of an Oil by Red Wood Viscometer at different temperature and plotting a graph between viscosity and temperature |
| 13th | 8 | Determine the viscosity of an Oil by Red Wood Viscometer at different temperature and plotting a graph between viscosity and temperature |
| 14th | 9 | Calibration of a thermocouple |
| 15th | 10 | Demonstrate function of digital multi-meter |

| LESSON PLAN OF 5TH SEMESTER (2024-2025) CHEMICAL ENGINEERING DEPARTMENT | | |
|---|---|---|
| **Discipline: Chemical** | **Semester: 3rd** | **Name of The Teaching Faculty: Yayati Kishore Mohanta** |
| **Subject: Practical-3 Mass Transfer 2 Laboratory** | **No of Days per week class allotted:3** | **Semester From:-1ST July 2024 To:-8TH Nov 2024**<br><br>**No of Weeks: 15** |
| **Week** | **Practical days** | **Practical Topic** |
| 1st | 1st<br>2nd<br>3rd | A. Demonstraton of operation of a Cooling Tower<br>B. Determination of humidity, humid volume, humid heat, percentage of humidity by psychometric method. |
| 2nd | 1st<br>2nd<br>3rd | A) Demonstration of operation of the wetted wall column<br>B) Determination of Psychometric parameter of outlet air |
| 3rd | 1st<br>2nd<br>3rd | A) Demonstrate operation of a tray dryer ( Vacuum / Atmospheric type)<br>B) Plot the rate of drying curve for a given sample of wet solid |
| 4th | 1st<br>2nd<br>3rd | Demonstrate operation of a Fluidized bed dryer |
| 5th | 1st<br>2nd<br>3rd | A) Demonstrate operation of an open pan crystallizer<br>B) Find the yield of crystal from a given solution |
| 6th | 1st<br>2nd<br>3rd | Mid Term Viva |
| 7th | 1st<br>2nd<br>3rd | Demonstrate operation of Swanson Walker Crystallizer |
| 8th | 1st<br>2nd<br>3rd | MID TERM VIVA |

| | | |
|---|---|---|
| 9th | 1st | Separate a solution into its component by using liquid liquid extraction metho |
| | 2nd | |
| | 3rd | |
| 10th | 1st | Demonstrate operation of a solid-liquid extractor |
| | 2nd | |
| | 3rd | |
| 11th | 1st | Demonstrate operation of spray tower |
| | 2nd | |
| | 3rd | |
| 12th | 1st | To determine the partition coefficient of Iodine between water and carbon tetrachlorid |
| | 2nd | |
| | 3rd | |
| 13th | 1st | Demonstrate operation of liquid-liquid extractor |
| | 2nd | |
| | 3rd | |
| 14th | 1st | END TERM VIVA |
| | 2nd | |
| | 3rd | |
| 15th | 1st | RECORD SUBMISSION AND VIVA BY EXTERNAL |
| | 2nd | |
| | 3rd | |