

| LESSON PLAN OF 3rd SEMESTER(2022-23) CHEMICAL ENGINEERING | | |
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| DISCIPLINE: CHEMICAL | Semester:-3RD | NAME OF THE TEACHING FACULTY DR. SUSHANTA KUMAR BEHERA |
| SUBJECT: MECHANICAL OPERATIONS | No of days per Week Allotted : 04 | SEMESTER: SEPTEMBER TO DECEMBER No of Weeks:- 15 |
| Week | Class/ Day | Theory/ Practical Topics |
| 1 ST | 1 st | Objectives of size reduction |
| | 2 nd | Kick's law |
| | 3 rd | Rittinger's law |
| | 4 th | Bonds law |
| 2 ND | 1 st | Crushing efficiency, Work index |
| | 2 nd | Solve simple problems |
| | 3 rd | Jaw crusher |
| | 4 th | Gyratory crusher |
| 3 rd | 1 st | Smooth roll crusher, Hammer Mill |
| | 2 nd | Ball Mill |
| | 3 rd | Closed and open circuit grinding |
| | 4 th | Dry and wet grinding |
| 4 th | 1 st | Free and choke grinding |
| | 2 nd | Objectives of size separation |
| | 3 rd | Shape and size of irregular particle |
| | 4 th | Different types of screen analysis |
| 5 th | 1 st | Ideal screen & actual screen, material balance |
| | 2 nd | Construction and operation of different types of industrial screens and their effectiveness |
| | 3 rd | Construction and operation of air filters |
| | 4 th | Construction and operation of air separator |
| 6 th | 1 st | Construction and operation of cyclone separator |
| | 2 nd | Construction and operation of magnetic and Electromagnetic separation |
| | 3 rd | Theory of settling |
| | 4 th | Stoke's law |
| 7 th | 1 st | Sedimentation |
| | 2 nd | Thickeners |
| | 3 rd | Clarifiers |
| | 4 th | Jigs |
| 8 th | 1 st | Principle & operation of froth floatation and its use |
| | 2 nd | Types of filtrations |
| | 3 rd | Theory of filtration |
| | 4 th | Types of cakes, cake resistance, pressure drop, filter medium, filter Aids and related derivation |

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| 9 th | 1 st | Construction and working principle of filtration equipment |
| | 2 nd | Construction and working principle of thickeners |
| | 3 rd | Batch and continuous centrifuges |
| | 4 th | Batch and continuous centrifuges with their construction, operation and uses |
| 10 th | 1 st | Flocculation |
| | 2 nd | Role of coagulant in filtration |
| | 3 rd | Objectives of mixing |
| | 4 th | Mixing of liquid with liquid |
| 11 th | 1 st | Mixing of liquid with solid |
| | 2 nd | Mixing of viscous materials |
| | 3 rd | Mixing of Solid with solid |
| | 4 th | Mixing of gases with liquids |
| 12 th | 1 st | The flow pattern in agitated vessel |
| | 2 nd | Methods of prevention of swirling and vortex formation, baffling |
| | 3 rd | Different impellers, propellers, paddles used in mixing operation |
| | 4 th | Objectives of transportation and storage |
| 13 th | 1 st | belt conveyor |
| | 2 nd | Apron conveyor |
| | 3 rd | Screw Conveyor |
| | 4 th | Bucket elevators |
| 14 TH | 1 st | Scrapers |
| | 2 nd | Pneumatic conveyer |
| | 3 rd | Storage and handling of solids |
| | 4 th | Construction and uses of silos and bins |
| 15 TH | 1 st | Objective Q&A discussion-I |
| | 2 nd | Objective Q&A discussion-II |
| | 3 rd | Objective Q&A discussion-III |
| | 4 th | Objective Q&A discussion-IV |