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**UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA**

LESSON PLAN

**SESSION: 2022-2023**

**DEPARTMENT OF CERAMIC TECHNOLOGY**

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**SUBJECT CODE:** TH-2

**NAME OF THE SUBJECT:** CHEMISTRY OF CERAMIC MATERIAL

**BRANCH:** CERAMIC TECHNOLOGY

**SEMESTER:** DIPLOMA 3RD SEM

**NUMBER OF CLASS ALLOTED PER WEEK:** 4

**TOTAL PERIODS ALLOTED TO THE SUBJECT ACCORDING TO STEVT:**60

**NAME OF THE FACULTY:** KRUSHNA PRASAD DASH

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| **Week/Date** | **Lecture** | **Topic to be covered** | **Remarks** |
| 1st week15/09/2022To17/09/2022 | 1st | Chapter-1:Thermodynamics and Thermo Chemistry1.1: Define different terms of thermodynamic system. |  |
| 2nd  | 1.2: State ideal gas law. |
| 3rd  | 1.3: Explain Extensive and intensive properties. |
| 2nd week19/09/2022To24/09/2022 | 1st | 1.4: Define and explain Homogeneous and heterogeneous system. |  |
| 2nd | 1.5: State and explain first law of thermo dynamics. |
| 3rd  | 1.6: Explain similarities between heat and work. |
| 4th  | 1.7: Define internal energy. |
| 3rd week26/09/31To01/10/2022 | 1st  | 1.8: Define heat capacity and specific heat. |  |
| 2nd  | 1.9: Define adiabatic Isothermal process. |
| 4th week03/10/22TO08/10/22 | 1st  | 1.10:Define heat of formation1.11:define heat of reaction |  |
| 2nd  | 1.12:Limitation in the 1st law of thermodynamics |
| 5th week10/10/22To15/10/22 | 1st  | 1.13:explain the postulates of 2nd law of thermodynamics |  |
| 2nd  | 1.14:Explain carnot cycle. |
| 3rd  | 1.15:Explain absolute scale of temperature. |
| 4th  | 1.16:State and explain free energy. |
| 6th week17/10/22To22/10/22 | 1st  | 1.17:Define entropy and chemical potential. |  |
| 2nd  | 1.18:State the importance of thermodynamics in ceramics in ceramic industry. |
| 3rd  | 1.19:State and explain 3rd law of thermo dynamics. |
| 4th | **CH. 2-PHASE RULE AND PHASE DIAGRAM** 2.1:Define phases, components, degree of freedom. |
| 7th week24/10/22To29/10/22 | 1st  | 2.2:Phase diagram of pure substance Eutectic system, leaver rule. |  |
| 2nd  | 2.3:Phase rule, one component, two component and three component system. |
| 8th week31/10/22TO05/11/22 |  | 2.4:Explain importance of phase diagram and its application. |  |
|  | 2.5:SiO2, Al2O3-SiO2, CaO-MgO and MgO-Al2O3 system. |
|  | **Ch. 3- COLLOID**3.1:Define and classify colloids. |
| 9th week07/11/22TO12/11/22 | 1ST  | 3.2:State & Explain different method of preparation of colloids. |  |
| 2ND | 3.3:Application of colloids in ceramic making and in other areas. |
| 3RD  | 3.4:Base exchange capacity, flocculation, deflocculation & clay water system. |
| 10th week14/11/22TO26/11/22 | 1st | **Ch.4-THERMAL ANALYSIS AND SPECTROSCOPY**.4.1:Introduction to thermo – gravimetric analysis. |  |
| 2nd | 4.2:Basic idea on thermal method of analysis. |
| 3rd | 4.3: State and Explain spectrophotometry concept in spectroscopy. |
| 11th week28/11/22TO03/12/22 | 1ST  | 4.4: Define spectroscopy and describe various types of spectrophotometers. |  |
| 2nd | 4.6: Visible spectrophotometry and colorimetric. |
| 12th week05/12/22TO23/12/22 | 1ST  | 4.7: Discuss different application of spectrophotometric. |  |
| 2ND  | 4.8: Description of atomic absorption spectrophotometers. |
| 3RD  | 4.9: Introduction DTA, TGA, XRD, & XRF. |
| Last 3week05/12/22TO23/12/22 |  | Revision & doubt clearing classes  |