

**K. D. K. COLLEGE OF ENGINEERING, NAGPUR
DEPARTMENT OF MECHANICAL ENGINEERING**

Session 2021- 2022

Teaching Plan

Department :- Mechanical Engineering

Subject:- M.S & E.

Sub. Code No. :- BEME403T

Period /Week:- 03

Semester :- **IV Semester**

| Lecture No. | Teaching Code Unit | Contents |
|-------------|--------------------|---|
| 1. | 101 | INTRODUCTION TO ENGINEERING MATERIALS AND THEIR CLASSIFICATION |
| 2. | 102 | PROPERTIES AND APPLICATION OF ENGINEERING MATERIALS |
| 3. | 103 | DIFFERENCE BETWEEN METALS AND NONMETALS.MECHANICAL PROPERTIES OF METAL |
| 4. | 104 | STUDY OF CRYSTAL STRUCTURE,POLYMORPHISM AND ALLOTROPY |
| 5. | 105 | MACROSCOPIC AND MICROSCOPIC EXAMINATION |
| 6. | 106 | SOLIDIFICATION OF PURE METAL |
| 7. | 107 | BINARY EQUILIBRIUM DIAGRAMS, ISOMORPHUS SYSTEM |
| 8. | 108 | STUDY OF FE FE-C DIAGRAM - USES & LIMITATIONS, INVARIANT REACTIONS. |
| 9. | 201 | PLAIN CARBON STEEL, CLASSIFICATION BASED ON CARBON PERCENT &APPLICATION;LIMITATIONS, EFFECT OF IMPURITIES |
| 10. | 202 | ALLOY STEEL, EFFECTS OF VARIOUS ALLOYING ELEMENTS |
| 11. | 203 | TOOL STEEL & ITS CLASSIFICATION |
| 12. | 204 | RED HARDNESS |
| 13. | 205 | STAINLESS STEEL – CLASSIFICATION, COMPOSITION & APPLICATION |
| 14. | 206 | HANDFIELD MANGANESE STEEL, MARAGING STEEL |
| 15. | 207 | O.H.N.S. STEEL |
| 16. | 208 | SELECTION OF STEEL FOR VARIOUS APPLICATIONS |
| 17. | 301 | TTT CURVE – CONSTRUCTION & LIMITATIONS |
| 18. | 302 | HEAT TREATMENT – PRINCIPLE, PURPOSE |
| 19. | 303 | ANNEALING & ITS TYPES |
| 20. | 304 | NORMALIZING, TEMPERING, AUSTEMPERING |
| 21. | 305 | MARTEMPERING, HARDENING, RETAINED AUSTENITE & ITS ELIMINATION, |
| 22. | 306 | MARAGING, PATENTING; |
| 23. | 307 | SURFACE HARDENING SUCH AS CARBURISING, NITRIDING, INDUCTION HARDENING |
| 24. | 308 | JOMINI END QUENCH TEST FOR HARDENABILITY |
| 25. | 401 | CAST IRON – CLASSIFICATION |
| 26. | 402 | GRAY CAST IRON, WHITE CAST IRON, NODULAR CAST IRON |
| 27. | 403 | MALLEABLE CAST IRON, MOTTLED CAST IRON |
| 28. | 404 | NI – HARD & NI – RESIST CAST IRON, MEEHANITE ALLO |
| 29. | 405 | STUDY OF NON- FERROUS ALLOYS – BRASSES, ITS TYPES |
| 30. | 406 | CU-ZN DIAGRAM |
| 31. | 407 | BRONZES, ITS TYPES |
| 32. | 408 | CU-SN DIAGRAM; AL-SI DIAGRAM |
| 33. | 501 | POWDER METALLURGY – INTRODUCTION |
| 34. | 502 | METAL POWDER & ITS PRODUCTION |
| 35. | 503 | HOT ISOSTATIC PRESSING, SECONDARY PROCESSES |
| 36. | 504 | LIMITATIONS & APPLICATION OF POWDER METALLURGY |
| 37. | 505 | FEW PRODUCTS SUCHAS SELF LUBRICATING BEARING, GEARS & PUMP ROTORS |
| 38. | 506 | FEW PRODUCTS SUCH AS ELECTRIC CONTACTS & ELECTRODES, MAGNETS, |
| 39. | 507 | DIAMOND IMPREGNATED TOOLS ETC. |

**Subject Teacher
Dr PANKAJ R GAJBHIYE**