

**DEPARTMENT OF MECHANICAL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL**

M.Tech (Self-Financed) Admission 2022-2023

Syllabus for the offline test

Engineering Mathematics: Linear Algebra, Calculus, Differential equations, Complex variables, Probability and Statistics, Numerical Methods.

Applied Mechanics and Design: Engineering Mechanics, Mechanics of Materials. Theory of Machines, Vibrations, Concepts of Mechanical Design

Fluid Mechanics and Thermal Sciences: Basic Fluid Mechanics, Thermodynamic systems and processes Heat Transfer Applications: Power Engineering: Air and gas compressors, I.C. Engines, Refrigeration and air-conditioning Turbo machinery, Renewable energy.

Materials and Manufacturing: Engineering Materials: Casting, Forming and Joining Processes: Machining and Machine Tool Operations: Metrology and Inspection: Computer Integrated Manufacturing:

Mechatronics and Industrial Automation: Mechatronics system, Instrumentation, Sensors and Actuators, Signal systems and control, Robotics, Modeling of systems.

References:

1. J. Wickert, *An introduction to Mechanical Engineering*, Cengage Learning India Pvt. Ltd, 3rd edn. 2015.
2. Gopala Krishna K.R., *Elements of Mechanical Engineering*, Subhas Store, 2015.
3. Gupta, P.N., and Poonia, M.P., *Elements of Mechanical Engineering*. 4th Edition, Standard Publications Ltd, 2009.
4. Yunus Cengel & Robert Turner, *Fundamentals of Thermal-Fluid Sciences*, McGraw-Hill, 4th Indian edn. 2017.
5. Rao P. N, *Manufacturing Technology*, Volume I and II, 5th Edn., McGraw-Hill, 2018.
6. Rajendra Karwa, *A Text book of Machine Design*, Laxmi Publications, 3rd edn., 2018.
7. Godfrey Onwubolu, *Mechatronics: Principles and Applications*, Elsevier India, 1st edn., 2006.
8. Jiju Antony, *Design of Experiments for Engineers and Scientists*, Elsevier, 2nd Edn., 2018.
9. Kalpakjian S & Schmid S.R., *Manufacturing Engineering and Technology*. 7th edn., Pearson Education, 2018.
10. Ervin Kreyszig, *Advanced Engineering Mathematics*, 10th edn., John Wiley and Sons, 2015.
11. Steven Chapra and R. Canale, *Numerical methods for Engineers*, McGraw-Hill, 6th edn, 2010.

Date and time of the test: 12-07-2022 at 9.00 AM

Head of the Department