



# APPLIED THERMODYNAMICS

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**COURSE OUTLINE :**

“Applied Thermodynamics” is a topic of fundamental interest to Mechanical Engineering and Energy Engineering disciplines. This course provides theoretical and thermodynamic background for steam and gas power cycle, refrigeration cycle, psychometric principles, internal combustion engine and gas turbine engine cycles, aircraft and rocket propulsion cycles. Prior to these topic, few lectures are devoted towards basic engineering thermodynamic fundamentals. The syllabus is framed with respect to guidelines of “Mechanical/Energy Engineering” UG course curriculum for respective engineering disciplines across the country. The methodical online teaching, problem solving approach and online evaluation will help the candidate for credit transfer for their course curriculum.

**ABOUT INSTRUCTOR :**

Prof. Niranjana Sahoo is affiliated as “Professor” in the Department of Mechanical Engineering, Indian Institute of Technology Guwahati. Having B. Tech Degree in Mechanical Engineering, he has received PhD Degree (in the year 2004) from Department of Aerospace Engineering, Indian Institute of Science

Bangalore. Till May 2020, he has 15 years teaching and research experience at different capacity in Department of Mechanical Engineering, Indian Institute of Technology Guwahati. He has taught several courses at undergraduate and postgraduate level in the area of Fluid and Thermal Engineering, such as Fluid Mechanics, Basic and Applied Thermodynamics, Heat and Mass Transfer, Refrigeration and Air Conditioning, Combustion, Gas Dynamics and Aircraft Propulsion.

Prof. Pranab K. Mondal is an Assistant Professor in the department of Mechanical Engineering at Indian Institute of Technology Guwahati since May 2015. He received his undergraduate and postgraduate degree from Jadavpur University, Kolkata, and completed his Ph.D. from Indian Institute of Technology Kharagpur in 2015. He worked as an Research Associate at IIT Khargpur for nearly one years before joining IIT Guwahati. He is currently working on stability analysis of flows with free-surfaces, experimental investigations of capillary filling of bio-fluids and droplet dynamics. He has co-authored more than 70 referred journal and conference publications. He is a regular reviewer of many reputed international journals and also associated with several sponsored projects.

**COURSE PLAN :**

**Week 1:** Review of Basic Thermodynamics

**Week 2:** Steam Power System

**Week 3:** Steam Power System

**Week 4:** Steam Power System

**Week 5:** Internal Combustion (IC) Engines

**Week 6:** Internal Combustion (IC) Engines

**Week 7:** Internal Combustion (IC) Engines

**Week 8:** Gas Turbine Engines

**Week 9:** Gas Turbine Engines

**Week 10:** Refrigeration and Air-conditioning System

**Week 11:** Refrigeration and Air-conditioning System

**Week 12:** Reciprocating Air Compressor