JIS COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL ENGINEERING

Heat Transfer Laboratory

Details of Laboratory:

Lab in-charge: Mr. Arnab Kundu

Heat Transfer Laboratory is a well equipped laboratory which provides ideas on practical measurement of the heat transfer through different kind of mediums. This laboratory is scheduled for 5th semester Mechanical engineering students. Apart from curriculum, some additional experimental setups are there which helps the students to enhance their knowledge. Students also get opportunity to implement their ideas through various application oriented micro projects.

Major Equipments:

1	Apparatus for measuring thermal conductivity of metal
3	Thermal conductivity of liquid measuring apparatus
4	Apparatus for measuring thermal conductivity of insulating powder
5	Natural convection apparatus
6	Forced convection apparatus
7	Parallel flow heat exchanger
8	Shell and tube heat exchanger
9	Emissivity measurement apparatus
10	Stefan Boltzmann apparatus

List of Experiments:

Sl. No.	Description
1	To determine the thermal conductivity of metal bar (Brass)
2	To determine the overall heat transfer co-efficient of the composite wall
3	To determine the thermal conductivity of liquid
4	To determine the thermal conductivity of insulating powder
5	To find out the heat transfer co-efficient and heat transfer rate from vertical cylinder in natural convection
6	To determine the average theoretical and experimental value of heat transfer co-efficient for forced convection
7	To determine the emissivity of grey body
8	To determine the value of the Stefan Boltzmann constant for radiation heat transfer
9	To determine overall heat transfer and effectiveness of shell and tube heat exchanger
10	To determine LMTD, effectiveness and the overall heat transfer coefficient for parallel and counter flow heat exchanger

Lab Occupancy

JIS College of Engineering
Lecture and Lab schedule for odd semester 2017-2018 STREAM/BATCH: ME-3A
B.Tech 3rdYear classes Room No 401(CMS) – Traditional

DAYS	10 am to 11 am	11 am to 12 am	12 pm to 1pm	1 to 2pm	2 to 3pm	3 to 4 pm	4 to 5 pm	5 to 6 pm
MON						**ME 592,Gr.ME3A(1)[PB+AM]**		
						ME 591Gr.ME3A(2)[SS+UR]		
TUE						ME 593 **Gr.ME3A(1)[AP]**		
						ME581,Gr.ME3A(2)[MRI]		
WED						ME 593 **Gr.ME3A(2)[SKB]**		
						ME581,Gr.ME3A(1)[AM]		
THU						**ME505A(RSS)RCMS401 ME505B(SH)[R-CMS402]**	**ME 502(PB)**	**MENTORS MEET**
FRI	**ME 592,Gr.ME3A(2)[PB+AM]**				**ME594A [ALL ME3A](RSS)**			**Speakers Corner**
	ME 591Gr.ME3A (1)[SS+UR]				**ME 594B[ALL ME3A][SH]**			

Subject: ME 501- Fluid Machinery , ME 502- Dynamics of Machines, ME 503- Design of Machine Elements-I, ME 504- Metrology & Measurement, HU(ME), 501- Values & Ethics , ME505A - Refrigeration & Air Conditioning, **ME 505B** - Mechatronics, ME 591- Fluid Mechanics & Hydraulic Machines Lab, **ME 592**- Dynamics of Machines Lab, ME 593- Metrology & Measurement Lab, ME 594 A- Refrigeration & Air Conditioning Lab, ME 594 B- Mechatronics Lab, ME581- Seminar

Faculty name: SS-Mr. Sujay Saha, UR- Mr. Uttam Roy, AM-Mr. Abhishek Mondal RSS-Mr. Rabi Sankar Singh, PB- Mr. Palash Biswas, MRI- Mr.Munshi Rasidul Islam, SKB- Mr.Shishir Kumar Biswas, AS-Mr. Anirban Sarkar, AK- Mr. Arnab Kundu, Mr.Subhasish Halder, KB-Mr. Kunal Banerjee

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Routine Coordinator
(Prof. P. Biswas)

HOD
(Prof. (Dr.) S. Ghosh)

Principal
(Prof. (Dr.) M. R. Dave)

JIS College of Engineering
Lecture and Lab schedule for odd semester 2017-2018 STREAM/BATCH: ME-3B
B.Tech 3rdYear classes Room No 402(CMS) – Traditional

DAYS	10 am to 11 am	11 am to 12 am	12 pm to 1pm	1 to 2pm	2 to 3pm	3 to 4 pm	4 to 5 pm	5 to 6 pm
MON						**ME594A [ALL ME3B](RSS)**		
						ME 594B[ALL ME3B][SH]		
TUE						**ME 592,Gr.ME3B(1)[KB+AS]**		
						ME 591Gr.ME3B(2)[AK+DM]		
WED						**ME 592,Gr.ME3B(2)[KB+AS]**		
						ME 591Gr.ME3B(1)[AK+DM]		
THU						**ME 505A(RSS)RCMS401 ME505B()[RCMS402]**	HU(ME), 501(AG)	**MENTORS MEET**
FRI	ME 593 **Gr.ME3B(1)[AP]**				ME 593 **Gr.ME3B(2)[SKB]**			**Speakers Corner**
	ME581,Gr.ME3B(2)[AM]				ME581,Gr.ME3B(1)[MRI]			

Subject: ME 501- Fluid Machinery , ME 502- Dynamics of Machines, ME 503- Design of Machine Elements-I, ME 504- Metrology & Measurement, HU(ME), 501- Values & Ethics , ME505A - Refrigeration & Air Conditioning, **ME 505B** - Mechatronics, ME 591- Fluid Mechanics & Hydraulic Machines Lab, **ME 592**- Dynamics of Machines Lab, ME 593- Metrology & Measurement Lab, ME 594 A- Refrigeration & Air Conditioning Lab, ME 594 B- Mechatronics Lab, ME581- Seminar

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Routine Coordinator	**HOD**	**Principal**
(Prof. P. Biswas)	**(Prof. (Dr.) S. Ghosh)**	**(Prof. (Dr.) M. R. Dave)**

Name of the Course: Heat Transfer Lab

Course Code: ME 591

Prerequisite: Basic Physics, Fluid mechanics, Heat Transfer Theory

Course Objective: Practically measure the heat transfer through different kind of mediums.

Course Outcomes:

Upon successful completion student will be able to:

ME591.1. Evaluate the problems involving steady state heat conduction in simple geometries.

ME591.2. Develop experimental solutions for problems involving free and forced convection

ME591.3. Differentiate radiation capabilities of black and grey surfaces by practical observation.

ME591.4. Analyze performance of basic types of heat exchangers and solve complex industrial problems.

Course Articulation Matrix:

CO Codes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
ME591.1		1	2	3					2		1		1	1	2
ME591.2		1	2	2					2		1	1	2	1	2
ME591.3		1	1	1					2		1		1	1	3
ME591.4		2	2	1					3		2	1	2	1	3
Avg.		1.25	1.75	1.75					2.25		1.25	0.5	1.5	1	2.5

Apparatus Details:

Emissivity measurement apparatus

Natural convection apparatus

Equipment for measuring thermal conductivity of insulating powder

Stefan's Boltzmann apparatus

Equipment for measuring thermal conductivity of liquids

Heat transfer co-efficient measuring apparatus

Parallel and counter-flow Heat Exchanger

Shell and Tube Heat Exchanger

Forced convection apparatus

Equipment for measuring thermal conductivity of metal bar