Tulsiramji Gaikwad-Patil College of Engineering and Technology

Wardha Road, Nagpur-441 108
NAAC Accredited
Approved by AICTE, New Delhi, Govt. of Maharashtra & Affiliated to RTM Nagpur University, Nagpur

Department of Mechanical Engineering

LIST OF VIRTUAL LABS FOR MECHANICAL ENGINEERING DISCIPLINES

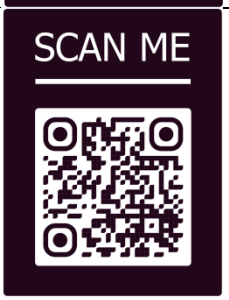
S. No.	Name of the labs	Name of the Experiments	Link	QR Code
1.	3D Printing Virtual Simulation Lab-1	To simulate the anatomy of 3D Printer, to get in-depth knowledge of mechatronics of 3D printer.	https://3dp-dei.vlabs.ac.in/exp/simulation-anatomy-fdm/index.html	SCAN ME
2.	3D Printing Virtual Simulation Lab-2	Simulation of Selective Laser Sintering (SLS) process for metals.	https://3dp-dei.vlabs.ac.in/exp/simulation-laser-sintering-metal/index.html	SCAN ME
3.	Dynamics of Machine	The aim of the simulation is to calculate and compare the experimental and theoretical moment of inertia by varying the radius of disc type flywheel and mass of the metal ball.	https://dom-nitk.vlabs.ac.in/exp/disc-type-flywheel/	SCAN ME
4.	Dynamics of Machine	The aim of the simulation is to calculate and compare the experimental and theoretical moment of inertia by varying the radius of rim type flywheel and mass of the metal ball.	https://dom-nitk.vlabs.ac.in/exp/rim-type-flywheel/	SCAN ME

5.	Machine Dynamics and Mechanical Vibrations Lab	To observe the effect of damping in Forced Vibration of Single Degree Of Freedom due to Base Excitation	https://mdmv-nitk.vlabs.ac.in/exp/exp-base-excitation-nitk/	
6.	Machine Dynamics and Mechanical Vibrations Lab	To observe the effect of damping in forced vibration of single degree of freedom due to rotating of unbalanced force	https://mdmv-nitk.vlabs.ac.in/exp/exp-rotating-unbalance-nitk/	
7.	Mechanics of Machine	To complete the simulation experiment on balancing multiple masses in a single plane by giving the input in driving yoke and to find the relative motion between the input and output shaft and find the variation angle output and input shaft of the universal joint.	https://mm-nitk.vlabs.ac.in/exp/universal-joint/	
8.	Mechanics of Machine	To complete the experiment on kinematics of crank and slotted mechanism thereby to find out the position, velocity and acceleration analysis.	https://mm-nitk.vlabs.ac.in/exp/crank-slotted-mechanism/	
9.	Mechanisms and Robotics Lab	To study about the Oldham Coupling Mechanism	https://mr-iitkgp.vlabs.ac.in/exp/oldham-coupling-mechanism/	

10.	Mechanisms and Robotics Lab	To study about the Quick Return Mechanism	https://mr-iitkgp.vlabs.ac.in/exp/quick-return-mechanism/	SCAN ME
11.	Model Based Fault Detection Lab	Model Based Fault Detection Lab	http://vlabs.iitkgp.ac.in/mbfd/	SCAN ME
12.	Fluid Mechanics Lab	To study different patterns (laminar, transition, and turbulent regimes) of a flow through a pipe and correlate them with the Reynolds number of the flow.	https://me.iitp.ac.in/Virtual-Fluid-Laboratory/reynolds/introduction.html]	SCAN ME
13.	Fluid Mechanics Lab	To calculate the meta-centric height with change in angle of heel of the given ship model.	https://me.iitp.ac.in/Virtual-Fluid-Laboratory/metacenter/introduction.html	SCAN ME
14.	Strength of Materials Lab	To study the mechanical properties of mild steel under torsion.	https://sm-nitk.vlabs.ac.in/exp/torsion-test-mild-steel/	SCAN ME

15.	Strength of Materials Lab	To determine experimentally, the ultimate shear strength in double shear of mild steel rod.	https://sm-nitk.vlabs.ac.in/exp/direct-shear-test-steel-rod/		SCAN ME
16.	Basic Engineering Mechanics and Strength of Materials	To determine the endurance limit of the given specimen under fatigue or cyclic loading.	https://eerc01-iiith.vlabs.ac.in/exp/fatigue-test-experiment/		SCAN ME
17.	Hydraulics and Fluid Mechanics Lab	To measure performance characteristics (output and efficiency variation with speed) for different openings of the nozzle at a constant input head.	https://eerc03-iiith.vlabs.ac.in/exp/turbines/		SCAN ME
18.	Heat Transfer	To understand the basic concepts of conduction and radiation as used in satellites.	https://aero04-iitb.vlabs.ac.in/exp3/index.html#		SCAN ME
19.	Heat Transfer	To determine the overall heat transfer coefficient (U) in the parallel flow heat exchanger	https://mfts-iitg.vlabs.ac.in/Heat.html		SCAN ME

20.	Remote Triggered Virtual Lab on Automotive Systems	Engine Health Monitoring by Vibration Analysis	http://vlabs.iitkgp.ernet.in/rtvlas/exp6/index.html	SCAN ME
21.	Remote Triggered Virtual Lab on Automotive Systems	Variation of Exhaust Noise with Engine Speed	http://vlabs.iitkgp.ernet.in/rtvlas/exp7/index.html	SCAN ME
22.	Heat & Thermodynamics Virtual Lab	Determination of Stefan-Boltzmann constant σ.	https://vlab.amrita.edu/index.php?sub=1&brch=194&sim=548&cnt=1	SCAN ME
23.	Manufacturing Processes Lab	The main objective of the lathe machine is to remove excess material from rotating work piece by a hard cutting tool.	http://vlabs.iitkgp.ac.in/psac/newlabs2020/vlabiitkgpAM/exp1/index.html	SCAN ME
24.	Manufacturing Processes Lab	To study the CNC turning machine.	http://vlabs.iitkgp.ac.in/psac/newlabs2020/vlabiitkgpAM/exp2/index.html	SCAN ME

25.	Lab on Advanced Manufacturing Methods	To study the characteristic features of EDM process.	http://vlabs.iitkgp.ac.in/psac/newlabs2020/vlabiitkgpMM/exp1/index.html	
26.	Lab on Advanced Manufacturing Methods	To study the effect of process parameters (laser power, scan speed, stand-off distance, oxygen assist gas pressure) on kerf-width, taper angle and cut quality (dross, striation) in fiber laser cutting of stainless steel sheet.	http://vlabs.iitkgp.ac.in/psac/newlabs2020/vlabiitkgpMM/exp2/index.html	
27.	Material response to micro structural mechanical thermal and biological stimuli	To study Creep transient for different materials	https://mrmsmtbs-iitk.vlabs.ac.in/exp/material-selection/	
28.	Material response to micro structural mechanical thermal and biological stimuli	To study the effect of obstacle distance on the creep transient behavior of materials	https://mrmsmtbs-iitk.vlabs.ac.in/exp/obstacle-distance/	

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Department of Mechanical Engineering

Virtual lab

Sr. No.	Name of Subject	Name of Faculty	Name of Topic	Link of You tube Lecture
1	Automation in Production	Mr. Vidhyadhar Kshirsagar	Practical on CNC Lathe Machine Part 1	https://www.youtube.com/watch?v=BQ2Xja89gBY&t=104s
2	Automation in Production	Mr. Vidhyadhar Kshirsagar	Practical on CNC Lathe Machine Part 2	https://www.youtube.com/watch?v=Faw93ILiLHE
3	Automation in Production	Mr. Vidhyadhar Kshirsagar	Practical on CNC milling Machine	https://youtu.be/J_eR-lrh-9M
4	Automation in Production	Mr. Vidhyadhar Kshirsagar	Performance of Operation on CNC Lathe Machine	https://www.youtube.com/watch?v=BQ2Xja89gBY&t=126s
5	Automation in Production	Mr. Vidhyadhar Kshirsagar	Introduction to key panel of controller of CNC Machine	https://www.youtube.com/watch?v=Faw93ILiLHE
6	Dynamics of Machines	Dr. Vijay Talodhikar	Practical on gyroscope	https://youtu.be/UjXXzrkaP5U
7	Dynamics of Machines	Dr Vijay Talodhikar	Practical on Whirling speed of shaft	https://youtu.be/1OEbIeDVEvg
8	Dynamics of Machines	Dr Vijay Talodhikar	Longitudinal vibration	https://youtu.be/GWHSr5MAF8I
9	Manufacturing Processes	Dr Vijay Talodhikar	Practical on Cam follower concept	https://youtu.be/95P5cDCAkao
10	Manufacturing Processes	Mr. Ashwadeep Fulzele	Practical 1 Lathe Machine-Construction	https://youtu.be/6WxXW2OInlE
11	Manufacturing Processes	Mr. Ashwadeep Fulzele	Practical 2 Taper Turning Operation	https://www.youtube.com/watch?v=9PRtBjTgYlo

12	Mechanical Measurement and Metrology	Mr. Ashwadeep Fulzele	Practical 2 Taper Turning Operation	https://www.youtube.com/watch?v=6WxXW2OInlE&t=164s
13	Mechanical Measurement and Metrology	Ms.Shubhangi Gondane	Practical on LVDT	https://www.youtube.com/watch?v=7s1-blvlYO0
14	Mechanical Measurement and Metrology	Ms.Shubhangi Gondane	Practical on Vernier Height Guage	https://www.youtube.com/watch?v=6hbOP9k0YoU
15	Mechanical Measurement and Metrology	Ms.Shubhangi Gondane	Practical on Profile Projector	https://www.youtube.com/watch?v=C6h2AcQW75M
16	Mechanical Measurement and Metrology	Ms.Shubhangi Gondane	Practical on Optical flat on Monocromatic lights	https://www.youtube.com/watch?v=StITUB5CuFo
17	Energy Conversion - III	Mr. Ritesh Banpurkar	Practical on Pneumatic System	https://www.youtube.com/watch?v=80YknK9DqpM
18	Energy Conversion - III	Mr. Ritesh Banpurkar	Practical on Hydraulic System	https://www.youtube.com/watch?v=Yz8MbtfiP2I
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