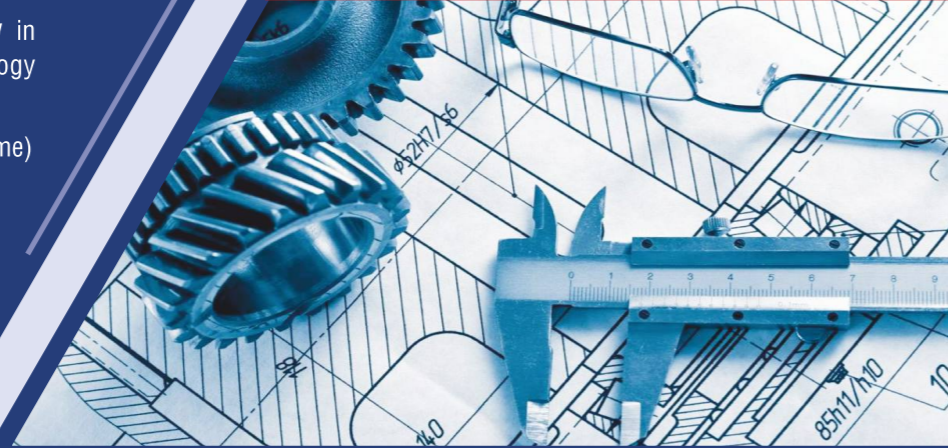


Programs Offered:

B. Tech. Mechanical Engineering in collaboration with Trident Pneumatics Private Limited, Coimbatore and AMZ Automotive, Jaipur.

M.Tech. Advanced Manufacturing Technology in collaboration with Central Manufacturing Technology Institute, Bengaluru.

Ph.D. Mechanical Engineering (Part time / Full time)



For further details and queries, contact:

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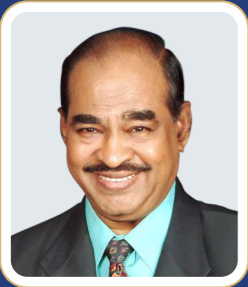
Centre for Research in Design and Manufacturing Engineering (CRDM)



Department of **Mechanical Engineering**



Karunya Founders



The late **Dr. D.G.S. Dhinakaran, C.A.I.I.B., Ph.D.**, the Founder Chancellor Emeritus of Karunya Institute of Technology and Sciences, was a world renowned spiritual leader, accepted by people of all faiths and leaders of many nations. He is the founder of the global Jesus Calls Ministry of which Karunya is just an offshoot. Millions of people all over the world receive hope and solace through his ministry. His vision for Karunya is that of a Technological University founded on faith that will produce teachers, engineers and managers possessing the right combinations of academic excellence, exemplary character and total humanism. The aim is to serve the motherland and fellow men and help raise the quality of life to global standards.



Dr. Paul Dhinakaran, M.B.A., Ph.D., the Chancellor of Karunya Institute of Technology and Sciences spearheads the University. He is an academician and educationalist in his own right. Apart from this, he is an evangelist who comforts millions through his ministry of hope and love. He heads Jesus Calls International Ministry with its outreach program all over the world. Dr. Paul Dhinakaran has a vital role to play in the cause of education in India as Member of National Monitoring Committee for Minority Education, Government of India and as member of the Governing Council of National Mission for Sarva Shiksha Abhiyan, Government of India.

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Preface

The Centre for Research in Design and Manufacturing Engineering (CRDM) in the Department of Mechanical Engineering established in 2006, is well-equipped with facilities for regular academic purposes, research and consultancy.

It has attracted lot of academicians and industries who sought after solutions for their research problems. Several academic and industrial problems especially in machining; fabrication of composite materials; analysis on tribological properties of materials; Selection, processing, property enhancement and characterization of materials are studied and solutions are provided.

Mission

To foster research in Design and Manufacturing Engineering through collaborations with researchers, R & D organizations and industries, to disseminate the research findings through publications, seminars, conferences, workshops and technology transfer schemes and to generate funds through consultancy services, patents and proposals to funding agencies.

Areas of Research & Consultancy

- Optimization of Process Parameters
- Cutting Fluid minimization in machining
- Analysis on tribological properties
- Fabrication of composite materials
- Machining of composites
- Materials processing and characterization

Centre Lathe with variable Speed & Feed Drive



Applications: Machinability and tool life studies, Optimization of Process Parameters while turning of various steels and composites, Turning with minimal fluid application, Studies on damping of vibration and heat pipe assisted machining.

Make : **Kirloskar**

Model : **Turnmaster – 35**

Spindle Motor : **3 hp / 2.2 kW DC Compound Type**

Feed Motor : **1 hp DC Compound Type**

Automatic Precision Surface Grinding Machine



Applications: Optimization of Process Parameters while grinding of various steels and composites, Grinding with minimal fluid application etc.

Make	: Craftsman
Model	: SG 3060
Table size	: 305 x 600 mm
Traverse (x, y, z)	: 650 x 360 x 300 mm
Spindle Speed	: 1450 rpm
Spindle Motor	: 5 hp
Hydraulic Motor	: 2 hp

Drilling Machine with Variable Feed Drive



Make	: CKP
Model	: PA / 30 / GT
Capacity	: 30 mm
Spindle Motor	: 1.5 hp Induction Motor
Feed Motor	: 1 hp DC Compound Motor

Applications: Optimization of Process Parameters while drilling of various steels and composites, Drilling with minimal fluid application etc.

CNC Turning Centre



Applications: Optimization of Process Parameters, Machinability Studies, Tool life studies etc.

Make	: Batliboi
Model	: Sprint 16TC
CNC control system	: Fanuc 01-TA
Distance between Centres	: 380 mm
Swing over Bed	: 400 mm
Maximum Turning Diameter	: 225 mm
Maximum Turning Length	: 325 mm
Speed Range	: 40 - 4000 rpm
Total Connected Load	: 16 kVA
Axis stroke (x, z)	: 125 x 325 mm

CNC Vertical Machining Centre



Applications: Optimization of Process Parameters, Machinability Studies, Tool Life Studies etc.

Make	: BFW
Model	: BMV40 T20
Control System	: Siemens 802D
Table Size	: 710 mm x 400 mm
Traverse (x, y, z)	: 510 x 410 x 460 mm
Magazine Capacity	: 20 tools
Spindle Motor	: 10 kW AC
Spindle Speed	: 60 - 6000 rpm
Total Connected Load	: 25 kVA

Spark Erosion Machine (EDM)



Applications:
Optimization of Process Parameters, Machinability Studies, Machining with High Velocity Flushing etc.

Make	: MMT
Model	: Minor - EM 150
Table size	: 350 x 210 mm
Vertical Travel	: 150 mm
Feed System	: DC Stepper Drive Servo
Reservoir Capacity	: 250 L
Pump	: 3 m ³ /hr.
Output Voltage	: 85 volts
Output Current	: 20 amps

Wire-cut Electrical Discharge Machine (Wire - EDM)



Applications: Preparation of highly accurate specimens for material testing. Optimization of Wire-EDM Process Parameters..

Tool Makers Microscope & Profile Projector



Applications: Tool wear and tool life studies.

Acoustic Emission Apparatus



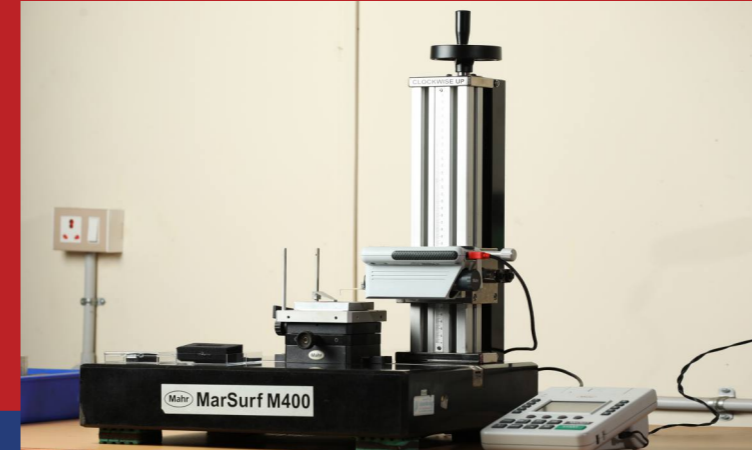
Make : **Dytran** Model : **5800B3**

Impact Hammer



Make : **Dytran** Model : **5800B3**

Surface Roughness Tester



Applications: Measurement of surface roughness and surface characteristics of machined workpieces.

Make : **Mahr / Mitutoyo**

Model : **M400 / SJ 210**

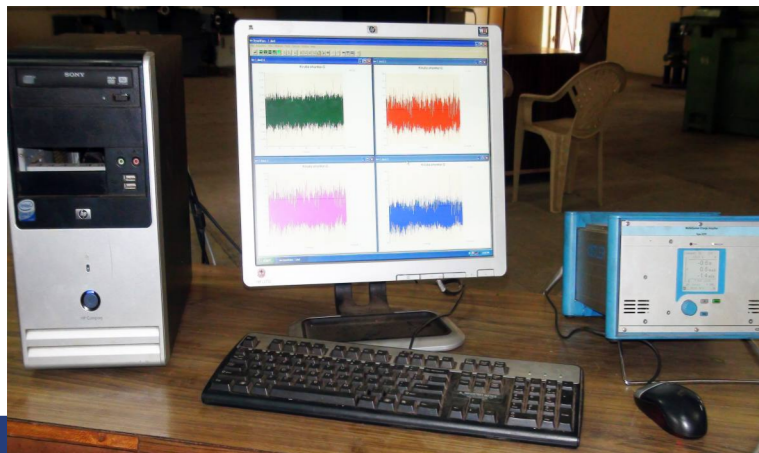
Measuring Range : **0-26 mm / 0-17.5 mm**

Evaluation Parameters : **$R_a, R_z, R_q, R_t, R_{max}, R_p, R_v, R_k$ etc.**

Sampling Length : **0.08 , 0.25 , 0.8 , 2.5, 5 mm**



Kistler Multicomponent Dynamometer



Applications: Measurement of cutting force during turning, Milling, Drilling and Grinding Operations.



Make	: Kistler Instrument Corp.
Model	: 9257B (Piezo electric)
Charge Amplifier Type	: 5070A
Measuring Range (Fx)	: -5.00 ... 5.00 kN
Measuring Range (Fy)	: -5.00 ... 5.00 kN
Measuring Range (Fz)	: -5.00 ... 5.00 kN
Number of Axes	: 3
Measuring Mode	: Direct
Length	: 170.0 mm
Width	: 100.0 mm

Vibrometer



Applications:

- Metal-to-metal impact testing
- Modal and structural analysis
- Product response testing
- Process control
- General purpose dynamic force measurements
- Measurement of frequency content of a vibration, sound or fatigue signal

FFT Analyzer



Force transducer : **Dytran 1051V3**

Uniaxial Accelerometer : **Dytran 3055B2**

Triaxial Accelerometer : **Dytran 3023A**

Microphone : **GRA 8mv-40PQ**

FFT Analyzer : **LMS Test Xpress, ASP424**

Induction Furnace



Applications: Melting of Aluminium and other high temperature materials and fabrication of Aluminium Matrix Composites.



Four Ball Tester



Applications: Evaluation of friction and wear properties of materials under pure dry, wet (forced, gravity & flash) and hot (up to 250°C) conditions. Abrasive wear can be measured. Tribological parameters namely friction force and wear can be measured.

Applications: Determination of Wear Preventive properties (WP), Extreme Pressure properties (EP) and friction behavior of lubricants.

Pin-on-Disc Wear Tester



Electronic Balance



Applications: Precise and perfect weight measurement and Measurement of material removal rate.

Make : **Shimadzu**

Model : **UW620H**

Capacity : **620 g**

Minimum Display : **0.001 g**

Infrared Thermometer



Make : **Amprobe**

Model : **IR750**

Range : **- 50°C to 1550°C**

Resolution : **0.1°C**

Applications: Measurement of temperature for automotive diagnostics, HVAC service, electrical troubleshooting, industrial maintenance, fire prevention and cutting temperature measurement.

Other Centres:



Centre for Research in Metallurgy



Centre for Research in Materials Science and Thermal Management

Centre for Research in
Design and Manufacturing
Engineering (CRDM)

