Eligibility & Regulations:

1. http://research.vtu.ac.in/,

2. https://vtu.ac.in/en/ph-d/#

3. https://vtu.ac.in/en/msc/

4. https://vtu.ac.in/en/ph-d-syllabus/

Research Supervisor:

Sl No.	Name	Designation	Specialisation
1.	Dr. Bhagyashekar M S	Principal	Composites
2.	Dr.Muzzamil Ahamed.S	Ex Principal	Metal Casting
3.	Dr.Mohammed Younus	Ex Professor	Design

Publications:

1. Dr. Mohamed zakaulla, Fathimaparveen, Amreen, Harish H,Artificial neural network based prediction on tribological properties of polycarbonate composites reinforced with graphene and boron carbide particle,Elsevier Journal - Materials Today Proceeding
2. Dr. M S Bhagyashekar,Design and Fabrication of solar organic Rankine Cycle Test Rig with Helical coil Heat Exchangers and Working fluid selection strategy,TEST Engineering and Management; ISSN:0193-4120, volume 83, April 2020
3. Nadeem Pasha K,Wear behavior of Titanium Alloys when subjected to different speed and load levels,International Journal of Recent Technology and Engineering (IJRTE) ISSN:2277-3878, Volume-8 Issue-6, March 2020.
4. Nehal Ahmad, B. Mahaboob Tabriz, FathimaParveen,Mechanical Behavior of Arc Welding using different Flux Materials,International Journal of Innovative Technology and Exploring Engineering (IJITEE) Volume-9 Issue-2, December 2019
5. TajuddinYezdani,Impact of RCS- Cross Root Process and die design in commercial Brass Alloy Sheets,International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958, Volume-9 Issue-2, December 2019
6. Nadeem Pasha K, SalimSharieff,Sliding Response Of Grade 5 Titanium Alloy at different speed and load levels ,International Journal of Recent Technology and Engineering (IJRTE) ISSN:2277-3878, Volume-8 Issue-3, September 2019
7. Pavan Kumar D, Mahaboob Tabriz B, Nehal Ahmad and Abdul Mujeeb,Design and Fabrication of Air Caster,Innovation in engineering science, Technolgy and management. 3 & 4 May 2019
8. Abdul Mujeeb, Pavan Kumar D,Design and development of lower limb Automated exoSkeleton,Innovation in engineering science, Technology and management. 3 & 4 May 2019
9. Nehal Ahmad, Mahaboob Tabriz B, Pavan Kumar D,Design and Fabrication of multifunctional Treadmill,Innovation in engineering science, Technology and management. 3 & 4 May 2019
10. SalimSharieff, Nadeem Pasha K,Role of different coating materials and coating thickness on velocity and displacement discontinuities in a tribo-system,International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8 Issue-6, April, 2019
11. Prof.SalimSharieff,Role of Velocity Discontinuity Imparted by Copper and Nickel Coatings of Different Thickness,International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8 Issue-3, September 2019
12. Harish H,Extraction of Biodiesel from Tung Seed Oil and Evaluating the Performance and Emission Studies on 4-Stroke CI Engine,IconAMMA 2019
13. Younus Pasha,Experimental Analysis of Fuel Properties And Performance analysis of diesel engine with esterified castor oil blended with gasoline,IconAMMA 2019.
14. Dr. Bhagyashekar M S,“Effect of machining parameters on surface roughness while turning metal matrix composites-an experimental approach”, Materials Today: Proceedings 5 (2018) 24770–24779,Materials Today: Proceedings 5 (2018) 24770–24779

15. Dr. Bhagyashekar M S,“Effect of Fillers on Electrical Conductivity of Epoxy Composites”, Journal of Polymer & Composites. (2018) 25-30 Volume 6, Issue 3 Volume 6 ISSN: 2321-2810 (Online), ISSN: 2321-8525
16. Dr. Bhagyashekar M S,Influence of Edge Condition of Cutting Tool on Cutting Force and Surface Roughness While Machining Aluminum –Fly Ash Composites, ,Materials Today: Proceedings 5 (2018) 11655–11666, ISSN: 2214-7853
17. Dr. Bhagyashekar M S,Wear behavior of friction stir welded AA6061-SiC Composites AA6061-4.5%Cu-SiC Hybrid composites plates,International Journal of fracture and Damage Mechanics
18. Farooq,An Experimental Investigation on Flexural and Tensile strength Behavior of Hybrid polymer composite materials by varying its thickness with Epoxy resin 5052,International Journal of Innovative science and research Technology:ISSN 2456-2165; Volume 3, Issue 6, June 2018
19. Nehal Ahmad, Dr. MuzzamilAhamed. S, Harish H, younus pasha,Experimental Analysys of E250 Quality Br Under Diverse Quenching Media,International Journal is Engineering research and applications. ISSN: 2248-9622
20. Tansif Khan,Lead Time Production in Manufacturing of Fuel injection pump Element,ICRRETMCE-2018, 13, 14 July 2018; ISBN: 978-93-5311166-3; Volume 1.
21. Tansif Khan,Study of CF53 and EN19 Steel for wear and corrosion Properties,ICRRETMCE-2018, 13, 14 July 2018; ISBN: 978-93-5311166-3; Volume 1.
22. Mohammed Yaseer Pasha,Development of Rotary Tool Feeding System for Micro-EDM,ICETE-2018;NMAMIT;14, 15 May 2018.
23. Mithun M,Design of composite layer tool for horizontal stabilizer spar of Advanced Light Helicopter,JETIR; May 2018, Volume 5, Issue 5.
24. SalimSharieff,Abrasive Wear Trends of NON-conforming contact surfaces,Elsevier, Materials today; proceedings 5; 2018.
25. Effect of Mono and Hybrid Fillers on Tensile Properties of Filled Epoxy Composites” ,Proceedings of International Conference on Current Trends in Eng., Science and Technology, ICCTEST, 2017, Grenze (2017) 182-188.
26. Dr. Mohamed Zakaulla,Hybridizing Micro - B4C With Carbon nanotubes to Enhance The Mechanical Properties of Aluminium Matrix Composites.,International Conference on Advanced Material Technologies.
27. Dr. Mohamed Zakaulla,Evaluating The Effect of Solutionising and Aging on Mechanical Properties of Al2024/B4c/Mwcnt’s Composite Synthesized By Vortex Technique,International Conference on Composite Materials and Structures- ICCMS 2017.
28. Dr. Bhagyashekar M S,“Development and Fabrication of Universal Tubular Micro Algae Photo-Bioreactor”, ,Proceedings of International Conference of Engineering Research in Mechanical and Civil Engineering (2017) Vol 2, Issue 5, 1065-1068, IFERP ISSN 2456-1290
29. Dr. Bhagyashekar M S,“Corrosion, wear properties of boron carbide and graphite reinforced Al2024 hybrid metal matrix composites” ,Proceedings of International Conference of Engineering Research in Mechanical and Civil Engineering (2017) Vol 2, Issue 5, 993-

999. IFERP ISSN 2456-1290.

30. Dr. Mohamed Zakaulla,Impact and Tensile Characterization of Polycarbonate/Graphene/Boron Carbide Hybrid Polymer Composite,International Conference on Composite Materials and Structures- ICCMS 2017
31. Dr. Mohamed Zakaulla,Tribological Characteristics of Multi walled Carbon Nanotubes and Boron Carbide particles reinforced Al - 2024 Matric Composites,International Conference on Materials Processing and Characterization
32. Dr. Mohamed Zakaulla,Processing & Characterization of Multiwalled Carbon Nanotubes and Titanium Carbide Reinforced Al7475 Composites for Aerospace Applications,International Conference on Composite Materials and Structures- ICCMS 2017
33. SalimSharieff, Nadeem Pasha K, International Conference on Advanced Material Technologies [ICAMT]
34. Abdul Mujeeb N,Impact of Precision Mechanized Harvesting on Therapeutic Quality and Throughput Propagation of Medicinal and Aromatic Plants (MAPs),International Journal of Emerging Technology and Advanced Engineering; ISSN: 2250-2459
35. Younus Pasha,Experimental Investigation of Emission Analysis of Diesel engine Fueled with Pongamia oil blends and Petroleum diesel,HKBK International Journal of Engineering Science and Technology
36. Younus Pasha,Experimental investigation of effect on surface finishing by Minimum Quantity Lubrication [MQL] with varying feed rate,HKBK International Journal of Engineering Science and Technology.
37. Dr. Bhagyashekar M S,“Effects of Mono (Al/Cu) Metallic and Hybrid (Al-Cu) Metallic Fillers on Tribological Performance of Epoxy Composites” ,Proceedings of International Conference on Modern Intelligent and Green Manufacturing (ICMIGM) 2015, (2015) 259-264, 11-12 Dec 2015, Sengunthar Engineering College, Erode
38. Dr. Bhagyashekar M S,“Experimental Study on Intermittent Turning of Aluminum Metal Matrix Composites Using Cryogenic Treated Carbide Inserts” ,Proceedings of International Conference on Modern Intelligent and Green Manufacturing (ICMIGM) 2015, 11-12 Dec 2015, Sengunthar Engineering College, Erode
39. Dr. Bhagyashekar M S,“Effect of Fillers on Electrical Conductivity of Epoxy Composites”, Journal of Polymer & Composites. (2018) 25-30 Volume 6, Issue 3 Volume 6 ISSN: 2321-2810 (Online), ISSN: 2321-8525
40. Dr. Bhagyashekar M S, "Effect of Tool holder overhang & Feed on Surface roughness in Turning application – an experimental approach",, International Journal of Scientific & Engineering Research, (2016), Volume 7, Issue 5, pp 269 ISSN 2229-5518
41. Dr. Bhagyashekar M S,“Effects of Mono (Al/Cu) Metallic and Hybrid (Al-Cu) Metallic Fillers on Flexural Performance of Epoxy Composites”, American Journal of Materials Science, 2015; 5(3C): 81-85, P-ISSN: 2162-9382 E-ISSN: 2162-8424.
42. Dr. Bhagyashekar M S, “Studies on Microstructure and Mechanical Properties of Friction Stir Welded AA6061 Composites Containing SiC”, Proceedings of 1stNational Conference on Trends and Innovations in Automation, Materials and Thermal Engineering (TIAMTE –

2015) Dept of PG center VTU Mysore, 21-22 May 2015.

43. Dr. Bhagyashekar M S,"Influence of Cutting Speed on Tool Life While Turning Aluminum Composites Containing Varied percent Flyash",Proc of 1stNational Conference on Trends and Innovations in Automation, Materials and Thermal Engineering (TIAMTE – 2015), Dept of PG centre VTU Mysore, 21-22 May 2015 page MS18-22.
44. Dr. Bhagyashekar M S, "TribologicalBehaviour of Epoxy Composite Containing Fly-Ash/Silicon Carbide Particulates",Proceedings of 1stNational Conference on Trends and Innovations in Automation, Materials and Thermal Engineering (TIAMTE – 2015), Dept of PG center VTU Mysore, 21-22 May 2015 page MS28-32.
45. Dr. Bhagyashekar M S, "Optimization Study of Ammonia and Glutaraldehyde Content on Vulcanization of Natural Rubber Latex". ,Iranian Polymer Journal.(2015)Vol24, Issue 11, P 901-909, Springer ISSN: 1026-1265 (Print) 1735-5265 (Online)
46. Dr. Bhagyashekar M S,"Thermal Conductivity Enhancement of Epoxy by Hybrid Particulate Fillers of Graphite and Silicon Carbide",Journal of Minerals and Materials Characterization and Engineering, 2015, 3, 76-84. ISSN Print: 2327-4077 ISSN Online: 2327-4085
47. Dr. Bhagyashekar M S,"Effects of Mono (Al/Cu) Metallic and Hybrid (Al-Cu) Metallic Fillers on Flexural Performance of Epoxy Composites",American Journal of Materials Science, 2015; 5(3C): 81-85, P-ISSN: 2162-9382 E-ISSN: 2162-8424.

Research Projects:

Ongoing Project 1:

Research Supervisor : Dr.Muzzamil Ahamed.S

Research Scholar :V. Nikil Murthy

Title: "Development of Nano Particle Filled Composites and Experimental Investigation On Improved Mechanical and Thermal Properties for Aerospace Applications"

The aim of the research is to develop Nano (montmorrilonite) reinforced carbon fiber epoxy composites and perform material characterization as per ASTM D618, D638 and D695. The proposed method would produce high quality Nano composites with improved mechanical properties (Tensile strength, Compression strength, Flexural strength) and Thermal properties like decomposition temperature by Thermo gravimetric analysis (TGA), Glass Transition Temperature by Differential scanning calorimetry (DSC), thermal conductivity and specific heat, volume fraction and Inter-laminar shear stress (ILSS).

Ongoing Project 2:

Research Supervisor : Dr.Muzzamil Ahamed.S

Research Scholar : Shaik Ismail Basha

Title: "Experimental Study and Development of Titanium (Ti) - Tantalum (Ta) Alloys for Biomedical Applications"

In this project proposal, the phase stability and elastic modulus of Ti–Ta simple binary alloys as well as alloys with small additions of ternary elements have to be study. The binary alloy from a nominal 8 to 28 wt.% Ta is first explored using a combinatorial approach. This approach included Laser Engineered Net Shape (LENS) processing of materials and subsequent characterization by instrumented indentation and site specific Transmission Electron Microscopy (TEM/SEM). The composition range of 15 to 75 wt.% Ta is further explored by more traditional methods that included vacuum arc melting high purity elements, X-Ray Diffraction (XRD) and modulus measurements by ultrasonic methods. Beyond the simple binary, alloys with low levels of ternary elements, oxygen, aluminum, zirconium and small additions of rare earth oxides are to be investigated.

Ongoing Project 3:

Research Supervisor : Dr.Mohammed Younus

Research Scholar : Mohammed Asadulla

Title: "Modification of Metal Surfaces for High Temperature Applications using Thermal barrier Coating"

The design of an engineering surface is concerned with preparing a surface with suitable modifications, so as to meet the functional requirements of the engineering components. Thermal sprayed coatings give high strength at elevated temperatures, wear resistance, resistanceto chemicalreaction,andalsocorrosion protection on engineering components. In Aerospace industry, the durability and efficiency of high temperature components are improved by the usage of thermal barrier coatings (TBC). In order to characterise the TBC, it requires a better understanding of thermal properties along with their failure mechanisms which are to be thoroughly investigated to estimate their performance and life at high temperature applications. Thermal barrier (TB) and thermal cycling resistance (TCR)

parameters play a important role. Thermal tests were carried out on different types of commonly used industrial TBC coatings namely, Alumina (A), Alumina-Titania (AT)) and partially stabilized zirconia (PSZ) for characterization. The presentwork also highlights about the usage of Taguchi design method, Genetic programming for the prediction of Maximum Thermal Barrier and Thermal Cycling Resistance (failure) of the above TBC for different parameters used at high temperatures. In this regard, a theoretical modelling has been suggested using vast experimental data for life prediction of TBC. It can also be used for the prediction and forecasting of TBC characteristics **KSCST Project details**

Student Group:

1. Geethu Suresh K
2. Jibin Jose Mathew
3. M Janani Priya

Under the guidance of:

1. Prof. Bhagya K
2. Prof. Smitha Kurian

Amount Sanctioned:Rs. 4000/-

Title: " Early Flood Detection & Avoidance Using IoT "

The main objective of this system is to design a new system for flood alert detection system integration in Web application. In addition to provide real time information about increase of water level in nearest river/pond/lake and provide an alert notifications system to end user in order to avoid catastrophic disaster and hence saving human lives. Maintain a regionally coordinated warning and emergency response program that can detect the flood threat.

IoT based flood monitoring and artificial neural network (ANN) based flood prediction is designed with the aim of enhancing the scalability and reliability of flood management system. The IoT approach is deployed for data collection from the sensors and communication. Cameras are implemented in order to validate the data collected from the sensors used for collecting data regarding rising water level. Plus real-time videos for water rising can be stored for future references. Raspberry Pi is used instead of Arduino element in order to transmit the real-time readings to the Web application.

Machine Learning is implemented in order to learn from the previous collected data so that floods can be predicted in future. We can also use cloud storage to collect data which can be further analyzed for machine learning purposes.

Ongoing Project 4:

Research Supervisor : Dr.Ranganatha S

Research Scholar : Salim Sharieff

Title: "Role of Displacement and Strain of Third Body in Tribosystem"

In all mechanical systems were in either motion or force is transmitted from one location to another location relative motion between two components takes place. For example, in case of bearings there will be displacement discontinuity between shaft and bearings. This discontinuity of displacement gives rise to discontinuity in velocity. These kinematic discontinuities give rise to wear and loss of energy. Different engineering solutions like lubricating giving hard coatings have been tried.

Ongoing Project 5:

Research Supervisor: Dr.Ranganatha S

Research Scholar: Nadeem Pasha K

Title: "Material Strain Rate Response in Abrasive Wear"

Titanium and its alloys are extremely used in aerospace, because of their special features being light weight and more tough. Titanium alloys find extensive use in turbine blades of aero engine. These aero engines are being demanded to run at high rate as possible so that flight timings are minimized. The special demand for motor to run at high speed also brings search for materials which could accomplish the desired requirement. Titanium and its alloys are extensively used which bridges the material requirement in manufacturing of aerospace components. These titanium alloy components used in aerospace industries are subjected to both complicated loading and thermal exposure. These complicated environment demands technical information which is required in designing of components. The more specific requirement in design is involving the information on wear and thermal effects. The literature survey indicates inadequate studies on effect of load and speed during relative motion.Response of these Titanium alloys under different load level and speed level during contact is investigated.

Ongoing Project 6:

Research Supervisor : Dr.Shantharaja M

Research Scholar : Tajuddin Yezdani

Title: "Characterization of Nonferrous Alloys Subjected toRepeatative Corrugation and Straightening – Cross RootTechnique"

In the modern times, there is compelling demand for miniaturization of electronic gadgets and to circumvent unwieldy designs in the automotive and aerospace structures, while enhancing strength-to-weight and stiffness-to-weight ratios. The demand for lightweight materials with high strength and stiffness transcends beyond the realms of engineering sectors to medical and dental applications. The metal research to explore new properties of nonferrous alloys finds expansive applications and an attempt is made to highlight some of the methods by which optimum strength can be achieved at minimal cost. The Objectives of the proposed research are to enhance the Mechanical properties of commercial available nonferrous alloy sheets such as Brass , & Titanium by subjecting them to severe plastic deformation.To study the wear and corrosion behavior of these materials after subjecting them to severe plastic deformation.

Ongoing Project 7:

Research Supervisor : Dr.M.Sreekanth

Research Scholar : Fathima Parveen

Title: "Energy analysis on combined cycle power plant"

Ongoing Project 8:

Research Supervisor : Dr.Rajanna S

Research Scholar : Harish H

Title: "Experimental investigation of performance and emission characteristics of scum oil and waste vegetable oil"

Biodiesel is a fatty acid alkyl ester which is renewable, biodegradable and non-toxic fuel which can be derived from any vegetable oil and animal fats. Vegetable oils and animal fats in their raw form have high viscosity that makes them unsuitable as fuels for diesel engines. Transesterification is one of the well-known process by which fats and oils are converted into biodiesel. The reaction often makes use of acid/base catalyst. The process of transesterification is affected by the mode of reaction condition, molar ratio of alcohol to oil, type of alcohol, type and amount of catalysts, reaction time and temperature and purity of reactants. The present study consists of the production of biodiesel from Dairy scum oil and Waste Vegetable oil with the use of sodium hydroxide as a catalyst.

Ongoing Project 9:

Research Supervisor : Dr. Swamy. D. R

Research Scholar **:** Younus Pasha

Title:"A sustainable alternative fuel for use in rural areas in C I engines"

Many earlier workers have blended vegetable oils with diesel fuel in different proportions and tried them in engines. Up to 50 % blending is considered tolerable without significantly altering the time between servicing the engine though there is no consensus about the blend percentage, whether it should be 50 or far less. Recently a cursory work has come to light where a blend with a small percentage of volatile solvents gave rise to viscosity reduction of the oil to acceptable levels for use in diesel engines. This however requires a confirmation from a detailed study of the cause and extent of viscosity reduction of different vegetable oils.

Ongoing Project 10:

Research Supervisor : Dr.M M Benal

Research Scholar **:** Ramachandra Kulkarni

Title: "Investigation of micro gas turbine using CFD and correlation with experimental values"

In this topic analysis will be carried out on gas turbine using geometrical mathematical and computational model and correlation of these results with existing experimental values

KSCST Project details

Ongoing KSCSTProject 1:

Student Group:

4. **Nihad Mir Abbas**
5. **Mohammed Zahid Khan**
6. **Abdul Nasir Sada**
7. **Fouzan Mukaram Ameer**

Under the guidance of:

3. **Prof.** Ramachandra Kulkarni
4. **Prof. Amreen R**

Amount Sanctioned:Rs. 5000/-

Title:"Design Analysis And Fabrication Of Contaminated Water Filtration System"

Completed KSCSTproject 1:
Student Group:

1. **Nanje Gowda H M**
2. **Balkaji E**
3. **Kalyana Kumar K**
4. **Sanjay G R**

Under the guidance of: Prof. Harish H

Amount Sanctioned:Rs. 8500/-

Title: "Effect of injection pressure and injection timing on diesel engine by performance and emission characteristics fueled with dairy waste oil"

Completed KSCSTproject 2:
Student Group:

1. **Sachin N**
2. **Shashank B S**
3. **Chetan Kumar B S**

Under the guidance of: Prof. Ramachandra Kulkarni

Amount Sanctioned:Rs. 8000/-

Title: "Design and fabrication of mechanically operated seed sowing equipment"

Completed KSCSTproject 3:
Student Group:

1. **C Ashish Jebin**
2. **Nithin Franklin S V**
3. **Balaji H S**
4. **Mohammed Haris B**

Under the guidance of: Prof. Abdul Mujeeb N

Amount Sanctioned:Rs. 9000/-

Title: "Mechanical Exoskeleton for the Disabled (Lower Limb)"

Completed KSCSTproject 4:

Student Group:

1. **Akshay**
2. **Amal Remanan**
3. **Mohammed Rashad T K**
4. **Mohasmmed Jaseem**

Under the guidance of: Prof. Younus Pasha

Amount Sanctioned:Rs. 11000/-

Title: "Experimental analysis of fuel properties and engine behaviour with pongamia seed oil as biofuel"

Completed KSCSTproject 5:

Student Group:

1. **Nouman Talha Adil**
2. **Syed Mursaleem Qazi**
3. **Nafeez Khan**
4. **Taufeeq Ahmed**

Under the guidance of: Prof. Younus Pasha

Amount Sanctioned:Rs. 10000/-

Title: "Analysis of fuel characteristics and performance parameters of Diesel engine using pongamia oil blends"