



# DAYANANDA SAGAR UNIVERSITY

School of Engineering

Kudlu Gate, Hosur Main Road, Bengaluru - 560068

Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled "MACHINE LEARNING IN HYDRAULICS" submitted by RENUKAPRASADVS(ENG18ME0046), SKANDA S VAIDYA(ENG18ME0063), SAHIL PASHA J (ENG18ME0052), MOHAMMED SALMAN(ENG19ME1016), in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of August 2021 to June 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage-II- 16ME481).

*Manish*

Dr. Manish kumar Mishra

(Assistant Professor)

Guide Name

*Sudha Deepthi*

Ms. Sudha Deepthi

(Assistant Manager)

Co-Guide

*Vinayak Hemadri*

Dr. Vinayak Hemadri

Chairman, ME

*A Srinivas*

Dr. A Srinivas

Dean, SoE, DSU



Internal Examiner

1. Dr. Saravana *Sar*

24/6/22

External Examiner

*Ashu*  
24/06/22

(Dr. A. Pattanaik)



# DAYANANDA SAGAR UNIVERSITY

School of Engineering

Kudlu Gate, Hosur Main Road, Bengaluru-560068

Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled **Abrasive wear and Micro structural analysis of LM13/Zircon/Carbon hybrid metal matrix composite** submitted by K Sai Tarun Reddy (ENG18ME0025) Pavan H (ENG19ME1018) Likith MK (ENG18ME0030) Jagadish Patil (ENG19ME1007) in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **February to JUNE 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B.Tech degree (Project work Stagell-16ME483).

Mr. Ravitej Y P

Assistant Professor  
Guide

Dr. Vinayak Hemadri

Chairman, ME

Dr. A Srinivas

Dean, SoE, DSU



Internal Examiner

Dr. Saswara,

24/6/22

External Examiner

Ashu  
24/06/22

Dr. A. Pattanaik,



**DAYANANDA SAGAR UNIVERSITY**  
**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

## Certificate

This is to certify that the Dissertation entitled 'DESIGN AND DEVELOPMENT OF MOULD SETUP WITH TEMPERATURE AND PRESSURE CONTROL FOR MASS PRODUCTION OF FIBRE METAL LAMINATES (FBL) COMPONENTS' submitted by MONISH S (ENG18ME0037), VEHAAL ANTONY PRAJWAL (ENG18ME0039), RISHI J (ENG18ME0047), VISHWAS GOWDA K R (ENG18ME0075) in fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of January to June 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work- 16ME483).

*Sgt*  
21/06/2022

Mr. Shashi Kant Kumar  
Assistant professor

*Internet search*  
*Dr. Suresh*  
21/6/22

*[Signature]*  
Dr. Vinayak Hemadri  
Chairman, ME



*A Srinivas*

Dr. A Srinivas  
Dean, SoE, DSU

*[Signature]*  
Dr. A. Pattanaiik  
24/06/22



# DAYANANDA SAGAR UNIVERSITY

School of Engineering

Kudlu Gate, Hosur Main Road, Bengaluru - 560068

Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled **Heavy load self-stabilizing cargo bed** submitted by **Group 4**, in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **January to June 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (**Project work Stage II- 16ME481**).

Ms. K Sudha Deepthi

Guide

Dr. Vinayak Hemadri

Chairman, ME

Dr. A Srinivas

Dean, SoE, DSU

Internal Examiner

Dr. Saravanan

24/6/22

Vikram Manivannan

Fajar

Devin John

ASSISTANT MANAGER,  
CENTRE OF COMPETENCE FOR AUTOMATION TECHNOLOGIES  
DAYANANDA SAGAR UNIVERSITY  
KUDLU GATE, HOSUR MAIN ROAD,  
BENGALURU - 560068



External Examiner

John  
24/06/22

(Dr. A. Pattanaik)



# DAYANANDA SAGAR UNIVERSIT

School of Engineering

Kudlu Gate, Hosur Main Road, Bengaluru - 560068


Department of Mechanical Engineering

## Certificate

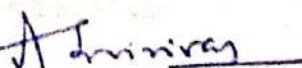
This is to certify that the Dissertation entitled 'Investigation of coefficient of friction on different apparent contact area at constant load & varying speed using AL6061 & EN8 steel Tribo pair' submitted by DHEERAJ ASHOK NAYAK (ENG19ME1003), PAWAN N (ENG19ME1019), DEEPAK V (ENG19ME1002), KUMAR GANACHARI (ENG19ME1011) in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of January to June 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II- 16ME483).

  
.....  
Dr. Vinay M S

Assistant Professor


  
.....  
Dr. Vinayak Hemadri

Chairman, ME

  
.....  
Dr. A Srinivas

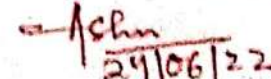
Dean, SoE,DSU

Internal Examiner

  
.....  
Dr. Srinivas B  
24/6/22



External Examiner

  
.....  
Dr. A. Pattanaik  
24/06/22



# DAYANANDA SAGAR UNIVERSITY

School of Engineering,  
Kudlu Gate, Hosur Main Road, Bangalore – 560068

## Department of Mechanical Engineering

# Certificate

This is to certify that the Dissertation entitled **FLEXURAL PROPERTIES OF SANDWICH COMPOSITE LAMINATES REINFORCED WITH HEXAGONAL AND RE-ENTRANT CORE STRUCTURES**, submitted by **SUBHODEEP MUKHERJEE (ENG18ME0066)**, **VAMSH R D (ENG18ME0072)**, **VITTAL DASHARATH HEBBARE (ENG18ME0076)** and **ARUNKUMAR M (ENG19ME1001)** in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **August 2021 to June 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree program. (Project work Stage II).

.....  
**Dr. Kamalbabu P.**  
Assistant Professor  
Guide

.....  
**Dr. Vinayak B Hemadri**  
Chairman, ME

.....  
**Dr. A Srinivas**  
Dean, SoE, DSU



External Examiner

Name: **Dr. A. Poottanaiik**

Signature with date: **24/06/22**

Internal Examiner

Name: **Dr. Saravva**

Signature with date: **24/6/22**



**DAYANANDA SAGAR UNIVERSITY**  
**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

# Certificate

This is to certify that the Dissertation entitled 'INVESTIGATION ON WELDABILITY AND CORROSION BEHAVIOUR OF NOVEL NICKEL ALLOY FILLER WITH SS AISI-304' submitted by MOHAN S-ENG18ME0036; RAMESH K-ENG18ME0045; SANATH P-ENG18ME0054; SANJITH G-ENG19ME0055, in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a Bonafede record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **February to June 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (**Project work Stage II- 16ME481**).

  
**Mr. Karthik S B**


Assistant professor, Guide

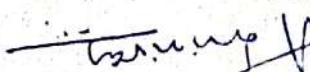


  
**Dr. V. Mayak Hemadri**

Chairman, ME


Internal Examiner

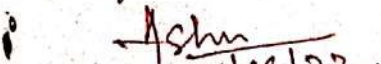
  
**Dr. Saravanan**  
 24/6/22

  
**Dr. A Srinivas**

Dean, SOE, DSU

External Examiner

  
**Dr. A. Pattanaik.**

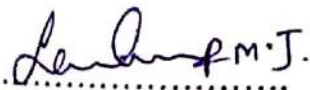
  
 24/06/22



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School of Engineering  
Kudlu Gate, Hosur Main Road Bengaluru - 560068  
Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled "AUTOMATIC DOOR UNLOCKING OF A FOUR WHEELER USING FACE RECOGNITION SECURITY SYSTEM." submitted by Samruddi B K - ENG18ME0053, Deeksha N V - ENG18ME0016, Sneha S - ENG18ME0064, Satya Charan V - ENG19ME1023; in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of February to June 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II-16ME483).



Mr. Sandeep MJ

Guide



Dr. Vinayak Hemadri

Chairman, ME



Dr. A Srinivas

Dean, SOE, DSU



Internal Examiner

Dr. Saravana B  
24/6/22

External Examiner

Achin  
24/06/22  
(Dr. A. Pattanaik)




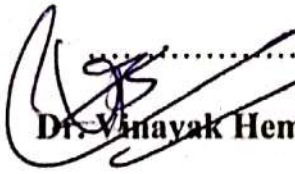
DAYANANDA SAGAR UNIVERSITY  
School of Engineering  
Kudlu Gate, Hosur Main Road, Bengaluru - 560068

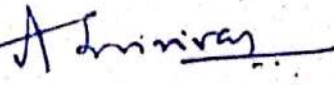
Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled "Design and Analysis of Front Mono-shock Suspension in Motorcycle" submitted by KAMALA KANNAN N (ENG18ME0027), DHARUN.K.S (ENG18ME0020), KARTHIK LAKSHMAN (ENG18ME0028), TEJASHWI KJ (ENG18ME0069) in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **January to June 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (**Project work Stage II- 15ME481**).

  
.....  
**Dr. Saravanabavan**  
Guide, Assoc. Professor

  
.....  
**Dr. Vinayak Hemadri**  
Chairman, ME

  
.....  
**Dr. A Srinivas**  
Dean, SoE, DSU

Internal Examiner

Name:.....*Vinay me*.....  
Signature:.....*[Signature]*.....  
Date:.....*24/06/2022*.....

External Examiner

Name:.....*Dr. Raghavendra V*.....  
Signature:.....*[Signature]*.....  
Date:.....*24/06/2022*.....



**DAYANANDA SAGAR UNIVERSITY**  
School of Engineering  
Kudlu Gate, Hosur Main Road, Bengaluru - 560068

## Certificate

This is to certify that the Dissertation entitled 'Automatic Tyre pressure and metal detection system in a four wheeler' submitted by **KRISHNA SHARMA V(ENG19ME1010), PAVAN B U(ENG19ME1017), MEGHANA S S(ENG19ME1014), VAISHNAVI VIJAY (ENG18ME0071)** in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of January to June 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II- 16ME483)

*Sandeep M J*

**Mr. Sandeep M J**

Guide Name

*Vinayak Hemadri*

**Dr. Vinayak Hemadri**

Chairman, ME

*A Srinivas*

**Dr. A Srinivas**

Dean, SoE, DSU

*MW*  
*29/06/2022*  
Internal Examiner

*TN*  
*24/6/22*  
External Examiner 2



DAYANANDA SAGAR UNIVERSITY  
School of Engineering  
Kudlu Gate, Hosur Main Road, Bengaluru - 560068  
Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled SOLAR DRYER FOR AGRICULTURAL PURPOSE submitted YASHWIN S S (ENG18ME0077), PRIYA M P (ENG19ME1020), BINDU SHREE M (ENG18ME0012), ANNE SIMRAN (ENG18ME0007) in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **August to December 2020**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (**Project work Stage II- 15ME481**).

Dr. Vinayak hemadri

Guide

Dr. Vinayak Hemadri

Chairman, ME

Dr. A Srinivas

Dean, SoE, DSU

24/06/2022

24/6/22



# DAYANANDA SAGAR UNIVERSITY

School of Engineering

Kudlu Gate, Hosur Main Road, Bengaluru - 560068

Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled '**Design and fabrication of leaf chopper to feed silkworm.**' submitted by **DILEEP NAIK-ENG18ME0021; SHARAN-ENG18ME0056; VISHNU NAIK-ENG18ME0074; ULASS PATTAR-ENG19ME1025**, in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **January to June 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (**Project work Stage II- 16ME483**).

**Prof. Bharath Shekhar H R**

Guide

  
.....  
**Dr. Vinayak B Hemadri**

Chairman, ME

**Dr. A Srinivas**

Dean, SoE, DSU

  
24/06/2022  
24/06/22



DAYANANDA SAGAR UNIVERSITY  
School of Engineering  
Kudlu Gate, Hosur Main Road, Bengaluru - 560068

Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled "EXTRACTION AND CHARACTERIZATION OF BIOFUEL FROM THE CHICKEN FAT WASTE" submitted by MITHAN B RAJ (ENG19ME1015), GIRISH (ENG19ME1004), KARTHIK M T (ENG19ME1008) in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of August to December 2020. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work II - 16ME483).

Mr. ABHILASH O

Guide

Dr. Vinayak Hemadri

Chairman, ME

Dr. A Srinivas

Dean, SoE, DSU

Internal Examiner

External Examiner



**DAYANANDA SAGAR UNIVERSITY**  
**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

**Certificate**

This is to certify that the Dissertation entitled "FABRICATION AND TESTING THE BOND STRENGTH OF FIBER METAL LAMINATES" submitted by Ananda S (ENG18ME0005), Maruthi S Tejas (ENG18ME0033), Raghavendra Raju B S (ENG18ME0044), Sohan H G (ENG18ME0065), in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of February to June 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II- 16ME483).

**Dr. Viswanathan R**  
Guide

**Dr. Vinayak Hemadri**  
Chairman, ME

**Dr. A Srinivas**  
Dean, SoE, DSU

**External Examiner**

Name : **Dr. Raghavendra TV**

Signature with date :

  
24/06/22

**Internal Examiner**

Name : **Vinay me**

Signature with date :

  
24/06/2022



# DAYANANDA SAGAR UNIVERSITY

School of Engineering

Kudlu Gate, Hosur Main Road, Bengaluru - 560068

Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled "AUTOMATION AND DEVELOPMENT OF BENDING MACHINE USING PLC" submitted by AYUSH L V (ENG18ME0008), BHARATH G (ENG18ME0009), DHARSHAN G (ENG18ME0019), MOHAMED SALMAN NASEER (ENG18ME0034) in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of February to May 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II- 16ME483).

*K. Sudha Deepthi*

Ms. Sudha Deepthi

Guide

*[Signature]*

Dr. Vinayak Hemadri

Chairman, ME

*A Srinivas*

Dr. A Srinivas

Dean, SoE, DSU

*External Examiner*  
*[Signature]*  
"24/06/22"  
*(Dr. Praveen Kumar)*

*Internal Examiner*  
*24/06/22*  
*[Signature]*

ASSISTANT CENTRE  
DAYANANDA SAGAR UNIVERSITY  
KUDLU GATE, HOSUR MAIN ROAD, BANGALURU - 560068



**DAYANANDA SAGAR UNIVERSITY**  
**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

## Certificate

This is to certify that the Dissertation entitled 'Design, Development and Fabrication of an Electric Vehicle' submitted by Vaibhav B Kolar (ENG18ME0070), Manda Sravan Bharadwaj (ENG18ME0032), Sahil A Nadaf (ENG18ME0051), Rahul S (ENG19ME1021) in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of January to June 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II- 16ME483).

*B.S.C. Ranjan*

**Dr. B.S.C Ranjan**

Guide Name

*[Signature]*

**Dr. Vinayak Hemadri**  
Chairman, ME

*[Signature]*  
24/06/2022  
Internal Examiner



*[Signature]*

**Dr. A Srinivas**  
Dean, SoE, DSU

*[Signature]*  
24/06/22  
External Examiner



DAYANANDA SAGAR UNIVERSITY  
School of Engineering  
Kudlu Gate, Hosur Main Road, Bengaluru - 560068

Department of Mechanical Engineering

## Certificate

This is to certify that the Dissertation entitled 'DESIGN AND FABRICATION OF CORN SHELLER MACHINE' submitted by ABHISHEK B M (ENG18ME0001), MAHESHCHANDRA S (ENG18ME0031), BHARATH YADAV B R (ENG18ME0011), BHARATH M (ENG18ME0010), in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of January to May 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II- 16ME483).

*Bharath Shekar HR*

Prof. Bharath Shekar H R

Guide

*Dr. Vinayak Hemadri*

Dr. Vinayak Hemadri

Chairman, ME

*A Srinivas*

Dr. A Srinivas

Dean, SoE, DSU

*External Examiner*

*24.6.22*

*Dr. Prashantha B. G.*

*Internal Examiner*

*RLH*

*24/06/22*



**DAYANANDA SAGAR UNIVERSITY**  
**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

## Certificate

This is to certify that the Dissertation entitled 'Dry sliding wear and corrosion analysis of LM13/Zircon/Carbon hybrid metal matrix composite' submitted by **AKSHAY P (ENG18ME0004), CHANNABASAVA KOLLI (ENG18ME0013), CHINMAY D BHAT (ENG18ME0014), DHARANISH D (ENG18ME0018)** in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **February to June 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the **B. Tech degree (Project Work Stage – II 16ME483)**.

**Mr. Ravitej Y P**

Guide

**Dr. Vinayak B Hemadri**

Chairman, ME

**Dr. A Srinivas**

Dean, SoE, DSU

External Examiner:

  
24/6/22  
(Dr. Praveen Kumar)

Internal Examiner

  
24/06/2022



**DAYANANDA SAGAR UNIVERSITY**  
**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Dissertation entitled **STRUCTURAL ANALYSIS OF COMPOSITE BLADE OF VERTICAL AXIS WINDMILL TURBINE** submitted by **ANIKET SINGH(ENG18ME0006), HIMALAYAN SHARMA(ENG18ME0023), HURTIK PALLYEKAR (ENG18ME0024), KARTIK PRAKASH IYER(ENG19ME1009)** in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **August 2021 to June 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (**Project work Stage I-16ME481**).

.....  
**Dr Rammohan Bhanumurthy**  
Guide

.....  
**Dr. Vinayak Hemadri**  
Chairman, ME

.....  
**Dr. A Srinivas**  
Dean, SoE, DSU

External Examiners:  
  
24/6/22  
(Dr. Pradeep Kumar Bhanu)

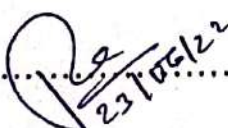
Internal Examiner  
  
24/6/22




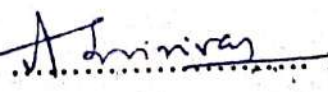
**DAYANANDA SAGAR UNIVERSITY**  
**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

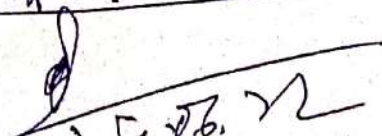
## Certificate


This is to certify that the Dissertation entitled “**Modelling and Analysis of Leaf Spring Made of Carbon Fiber Reinforced Epoxy**” submitted by, **Sachin R, Gokul Raj B K, Harshavardhan R and Manoj Gowda U** in partial fulfilment of the requirements for the award of the degree **Bachelor of Technology in Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **January to May 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (**Project work Stage II- 16ME483**).

  
.....  
**Dr. Rahul Kumar**  
Guide

  
.....  
**Dr. Vinayak Hemadri**  
Chairman, ME

  
.....  
**Dr. A Srinivas**  
Dean, DSU

External Examiner  
  
.....  
**(Dr. Prashanth)**

Internal Examiner  
  
.....  
**24/06/2022**



**DAYANANDA SAGAR UNIVERSITY**  
**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Dissertation entitled 'Design & Development of E-Powertrain for Electric Utility Vehicle' submitted by SURAJ SUNEETH (ENG18ME0067) , TANISHQ M H (ENG18ME0068), SIDDHANTH SHANKAR (ENG18ME0062), SHREYAS H M (ENG18ME0060) in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of January to June 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II- 16ME483).

*B. S. C. Ranjan*

**Dr. BSC Ranjan**

Guide

*[Signature]*

**Dr. Vinayak Hemadri**  
Chairman, ME

*[Signature]*  
24/06/2022

*[Signature]*

**Dr. A Srinivas**  
Dean, SoE, DSU

*[Signature]*  
24/06/22



**DAYANANDA SAGAR UNIVERSITY**  
**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

# Certificate

This is to certify that the Dissertation entitled “DESIGN AND ANALYSIS OF THERMAL MANAGEMENT OF EV BATTERY” submitted by **PRINCE GIFTSON W.S (ENG18ME0041), PRAJWAL KUMAR.E (ENG18ME0039), PREETHAM. K (ENG18ME0040)** in partial fulfilment of the requirements for the award of the Degree Bachelor of Technology in Mechanical Engineering is a Bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of February to June 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech Degree (**Project workStage II- (16ME483)**).

Dr. Saravanabavan D  
Guide, Assoc. Professor

Dr. Vinayak B Hemadri  
Chairman, Mechanical Engg.

Dr. A. Srinivas  
Dean, SoE, DSU

Internal Examiner

Name: **Dr. VISWANATHAN R**

Signature:

Date: **24/6/22**

External Examiner

Name:

Signature:

Date: **24.06.22**



**DAYANANDA SAGAR UNIVERSITY**

**School of Engineering,  
Kudlu Gate, Hosur Main Road, Bangalore – 560068**

**Department of Mechanical Engineering**

**Certificate**

This is to certify that the Dissertation entitled 'EXTRACTION & CHARACTERIZATION OF BIODIESEL FROM FISH OIL', submitted by S.BHARATH (ENG18ME0050), AKASH MN (ENG18ME0002), SHREYAS R (ENG18ME0061) and SHIVAPRASAD (ENG18ME0059) in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of January to May 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree program. (Project work Stage II-16ME483).

.....  
**Mr. ABHILASH O**  
Assistant Professor  
Guide

.....  
**Dr. Vinayak B Hemadri**  
Chairman, ME

.....  
**Dr. A Srinivas**  
Dean, SoE, DSU

**External Examiner**

Name:

Signature with date: .. 24/6/22

**Internal Examiner**

Name: **Dr. VISWANATHAN R**

Signature with date: 24/6/22



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School of Engineering

Kudlu Gate, Hosur Main Road, Bengaluru - 560068

Department of Mechanical Engineering.

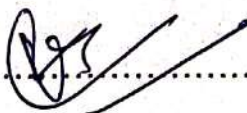
## Certificate

This is to certify that the Dissertation entitled "DEVELOPMENT AND TESTING OF GLASS FIBER REINFORCED COMPOSITES" submitted by, SK NAJID HOSSAIN(ENG17ME0063), B.SOHAIB AKTHAR(ENG17ME1008), DARSHAN K (ENG18ME0015), TAHEER REHMAN MATTE (ENG19ME1024) in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of January to May 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II- 16ME483).

  
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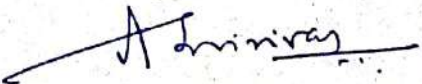
Dr. Viswanathan R

Guide

  
.....

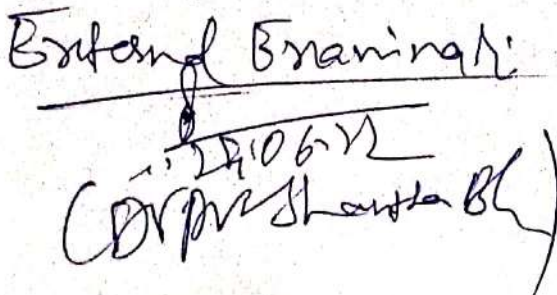
Dr. Vinayak B Hemadri

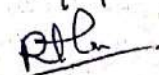
Chairman, ME

  
.....

Dr. A Srinivas

Dean, SoE, DSU

  
.....  
24/06/22  
(Dr. Prashant B.)

Internal Examiner  
24/6/22  




DAYANANDA SAGAR UNIVERSITY  
School of Engineering,  
Kudlu Gate, Hosur Main Road, Bangalore – 560068

Department of Mechanical Engineering

Certificate

This is to certify that the Dissertation entitled “Evaluation of Mechanical and Wear Properties of Al2218 Alloy Reinforced With Nano B4C Particulates” submitted by CHANDAN.C.B (ENG17ME0015), K.GIRIDHARAN (ENG17ME0026) and RAHUL.L (ENG19ME1012) in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of August 2021 to February 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree program. (Project work Stage I).

Prof. Shashidhara L C  
Assistant Professor

Guide

Bonafide Examined:

(Prof. Shashidhara L C)

Dr. Vinayak B  
Hemadri  
Chairman, ME

Dr. A Srinivas  
Dean, SoE, DSU

Internal Examiner

24/6/22



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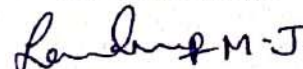
## Department of Mechanical Engineering

### Certificate

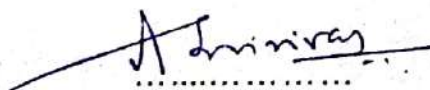
This is to certify that the Dissertation entitled 'THERMO MECHANICAL FATIGUE ANALYSIS USING DIFFERENT PARENT WELD MATERIALS' submitted by KARUNA MAHANTESH MUGABAST (ENG18ME0029) in partial fulfilment of the requirements for the award of the degree Bachelor of Technology in Mechanical Engineering is a bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of January to May 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the B. Tech degree (Project work Stage II- 16ME483).

  
Dr. Vinayak B Hemadri

Chairman, ME

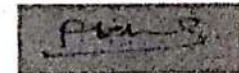
  
Mr. SANDEEP MJ  
Guide Name





Dr. A Srinivas

Dean, SoE, DSU

  
Mr. PAVAN KOLARI  
Co-guide

External Examiner

Name: Dr. A. Pattanaik

Signature with date: Ashu  
24/06/22

Internal Examiner

Name: Dr. Srinivas

Signature with date: Srinivas  
24/6/22



**DAYANANDASAGARUNIVERSITY**

**School of Engineering**

**Kudlu Gate, Hosur Main Road, Bengaluru – 560068**

**Department of Mechanical Engineering**

**Bonafide Certificate**

This is to certify that the Dissertation entitled “**DESIGN, FABRICATION AND ANALYSIS OF COCONUT DEHUSKING MACHINE**” submitted by **SAGINALA SANDEEP SAGAR (ENG20DEG005)**, in partial fulfillment of the requirements for the award of the degree of **Master of Technology in Design Engineering** is a Bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the period of **February to July 2022**. The project report has been approved as it satisfies the academic requirements for the project prescribed for the M.Tech Degree (**Dissertation phase-II 20MDE5402**).

Dr. Saravana Bavan D

Guide, Assoc. Professor

Dr. Anayak B Hemadri

Chairman, Mechanical Engg.

**Internal Examiner**

Name: *Dr. Saravana Bavan*

Signature:

Date: *13/07/2022*

**External Examiner**

Name: *Dr. Adarsha H.*

Signature:

Date: *13.07.22*



# DAYANANDA SAGAR UNIVERSITY

School of Engineering

Kudlu Gate, Hosur Main Road, Bengaluru - 560068

Department of Mechanical Engineering

## BONAFIDE CERTIFICATE

This is to certify that the Dissertation entitled "DESIGN, FABRICATION AND ANALYSIS OF CRUSHING UNIT FOR COCONUT FIBER" submitted by SHIVSHANKAR (ENG20DEG006) in partial fulfilment of the requirements for the award of the Post Graduate Degree of Master of Technology in Design Engineering is a Bonafide record of the work carried out at School of Engineering, Dayananda Sagar University, Bengaluru, during the period of February to July 2022. The project report has been approved as it satisfies the academic requirements for the project prescribed for the M. Tech Degree (Dissertation phase II-20MDE5402)

Dr. Saravanabavan D

Guide, Assoc. Professor

13/7/2022

Dr. Vinayak B Hemadri

Chairman, Mechanical Engg.

Internal Examiner

Name: Shashidhar d. C

Signature:

Date: 13-07-2022

External Examiner

Name: Adarsha H

Signature:

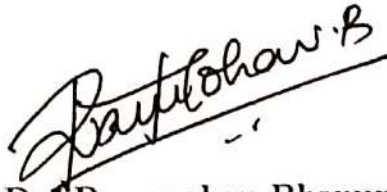
Date: 13.07.2022

## BONAFIDE CERTIFICATE

This is to certify that the project titled **FLUTTER SUPPRESSION OF COMPOSITE WING EMBEDDED WITH SHAPE MEMORY ALLOY (SMA)** is a bonafide record of the work done by

Harathi Meghashyam(ENG20DEG001).

in partial fulfillment of the requirements for the award of the degree of **Master of Technology in Design Engineering** of the **DAYANANDA SAGAR UNIVERSITY, BANGALORE**, during the year 2021-2022.




Dr. Rammohan Bhanumurthy  
Guide



Dr. Vinayak B Hemadri  
Chairman of the Department

Project Viva-voce held on 13, July 2022  
Internal Examiner External Examiner



  
Dr. Adarshatti  
18.07  
2022



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**RIVORA - water body monitoring UAV**” submitted by CHETHAN S (ENG21ME1006), DARSHAN REDDY M (ENG21ME1007), DHANUSH RAJ K (ENG21ME1008) and DILIP N (ENG21ME1009), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

.....  
**Mr. Shashikant Kumar**

Guide

.....  
**Dr. Vinayak B Hemadri**

Chairman, ME



**Chairman**  
Dept. of Mechanical Engineering  
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Bengaluru-560 114.



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**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

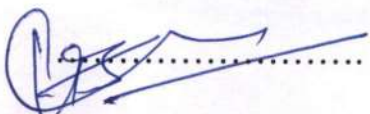
**Department of Mechanical Engineering**

## **Certificate**

This is to certify that the Mini Project entitled “**Application of Minimization, Multifunctionality & JIT in Product design**” submitted by ROHIT HL (ENG21ME1018), ROHITH S K (ENG21ME1019), RUSHIKESH M CHOUDHARI (ENG21ME1020) and SANGAMESH (ENG21ME1021), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

  
.....  
**Dr. Rahul Kumar**

Guide

  
.....  
**Dr. Vinayak B Hemadri**

Chairman, ME



**Chairman**  
Dept. of Mechanical Engineering  
School of Engineering  
Dayananda Sagar University  
Kudlu Gate, Hosur Main Road,  
Bengaluru-560 114.



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**Data Science And Analysis Of Analytics And Optimization**” submitted by NITHINKUMAR N M (ENG21ME1014), OMKARAYYA BABAYYA TIGADI (ENG21ME1015), PAVAN M (ENG21ME1016) and PRAMOD SRIKANTH (ENG21ME1017), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Mr. Shashidhar L C**

Guide

**Dr. Vinayak B Hemadri**

Chairman, ME



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Bengaluru-560 114.



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**Energy Audit and Management**” submitted by GIRISH B (ENG21ME1010), GUNASEKAR K (ENG21ME1011), LALITH KARTHICK B NAIDU (ENG21ME1012) and MANOJ G M (ENG21ME1013), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

Handwritten signature of Mr. Abhilash O in black ink.

**Mr. Abhilash O**

Guide

Handwritten signature of Dr. Vinayak B Hemadri in blue ink.

**Dr. Vinayak B Hemadri**

Chairman, ME



**Chairman**  
Dept. of Mechanical Engineering  
School of Engineering  
Dayananda Sagar University  
Kudlu Gate, Hosur Main Road,  
Bengaluru-560 114.



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**Heads up display**” submitted by KARTHIK S SASTRY (ENG20ME0009), KUNAL SINGH VIRDI (ENG20ME0010), MOHAN PRASAD S (ENG20ME0011) and MOHAN S (ENG20ME0012), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Vinayak B Hemadri**

Guide

**Dr. Vinayak B Hemadri**

Chairman, ME



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School of Engineering  
Dayananda Sagar University  
Kudlu Gate, Hosur Main Road,  
Bengaluru - 560 068.



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**Thermal Analysis of Dry and Isentropic Working Fluids in Superheated ORCs for Waste Heat Recovery in Cement Industries**” submitted by HEMANTH J (ENG20ME0005) HITESH D N (ENG20ME0006), INDRA R (ENG20ME0007) and JASON HERMAN ALFI S (ENG20ME0008) , in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Vinayak B Hemadri**

Guide

**Dr. Vinayak B Hemadri**

Chairman, ME



**Chairman**  
Dept. of Mechanical Engineering  
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Bengaluru - 560 068



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**Fire extinguisher drone**” submitted by **ARIJIT BORO (ENG20ME0001)**, **ARPAN MINJ (ENG20ME0002)**, **DARSHAN JAVANNANAVAR (ENG20ME0003)** and **GURUKIRAN A (ENG20ME0004)**, in partial fulfilment of the requirements for academic curriculum of second year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr Vishwanath**

Guide .

**Dr. Vinayak B Hemadri**

Chairman, ME



**Chairman**  
Dept. of Mechanical Engineering  
School of Engineering  
Dayananda Sagar University  
Kudlu Gate, Hosur Main Road,  
Bengaluru-560 114.



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**Grain Structure Analysis**” submitted by SHAKTHI PRASAD R (ENG21ME1022), THAMAN K P (ENG21ME1023) and V SHIVUKUMAR (ENG21ME1024), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Vishwanathan R**

Guide

**Dr. Vinayak B Hemadri**

Chairman, ME



**Chairman**  
Dept. of Mechanical Engineering  
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Dayananda Sagar University  
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Bengaluru-560 114.



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**Combined Lathe Milling & Drilling Machining**” submitted by AJITH R (ENG21ME1002), AKSHARA KASHYAP (ENG21ME1003), BHARATH C M (ENG21ME1004) and CHETHANKUMAR M R (ENG21ME1005), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru, during the academic year 2021-2022.**

The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Mr. Abhilash O**

Guide

**Dr. Vinayak B Hemadri**

Chairman, ME



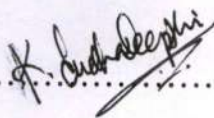
**Chairman**  
Dept. of Mechanical Engineering  
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Bengaluru-560 114.



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**PLC INTERFACED WITH 3D PRINTERS**” submitted by MOHITH K R (ENG20ME0013), PUNITH RAJ H K (ENG20ME0014), SATHYANARAYANA T N (ENG20ME0015) and SHARATH K (ENG20ME0016), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

  
.....

**Ms. Sudha Deepthi**

Guide

  
.....

**Dr. Vinayak B Hemadri**

Chairman, ME



**Chairman**  
Dept. of Mechanical Engineering  
School of Engineering  
Dayananda Sagar University  
Kudlu Gate, Hosur Main Road,  
Bengaluru - 560 068



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

## **Certificate**

This is to certify that the Mini Project entitled "**Fire extinguisher drone**" submitted by VISHNU D (ENG21ME1025), VISHWAS VS (ENG21ME1026) and YATHISH M (ENG21ME1027), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

.....  
**Mr. Vinay M S**

Guide

.....  
**Dr. Vinayak B Hemadri**

Chairman, ME



**Chairman**  
Dept. of Mechanical Engineering  
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Dayananda Sagar University  
Kudlu Gate, Hosur Main Road,



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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**Experimental Investigation on corrosion behaviour of ZA-27 hybrid Metal matrix composite**” submitted by, Kishor G (ENG20ME1008), Manoj Kumar R (ENG20ME1011), Pavan P (ENG20ME1014) and Ranjith Kumar N (ENG20ME1016), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Rahul Kumar**

Guide

**Dr. Vinayak B Hemadri**

Chairman, ME



**Chairman**  
Dept. of Mechanical Engineering  
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Kudlu Gate, Hosur Main Road,  
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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**  
**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**3D printing in Low cost modelling**” submitted by Syed Abdul Malik (ENG19ME0040), Dhananjay Dabeer (ENG19ME0011), Vinay V Hanchate (ENG19ME0046) and Suhas M (ENG19ME0037) , in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

.....  
**Dr. Sarvanabhavan**

Guide

.....  
**Dr. Vinayak B Hemadri**

Chairman, ME

**Chairman**  
Dept. of Mechanical Engineering  
School of Engineering  
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Bengaluru-560 114.





# DAYANANDA SAGAR UNIVERSITY

School of Engineering

Kudlu Gate, Hosur Main Road, Bengaluru - 560068

Department of Mechanical Engineering

## Certificate

This is to certify that the Mini Project entitled “**Exergy analysis of radiating fins**” submitted by, Pradyumna D Thayur (ENG19ME0025), and Dilip Gowda (ENG19ME0015), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Subhramanya Katte**

Guide

**Dr. Vinayak B Hemadri**

Chairman, ME

Chairman  
Dept. of Mechanical Engineering  
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Dayananda Sagar University  
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**School of Engineering**  
**Kudlu Gate, Hosur Main Road, Bengaluru - 560068**

**Department of Mechanical Engineering**

## Certificate

This is to certify that the Mini Project entitled “**Hybrid 3d Printed hand Exoskeleton**” submitted by, Vikas D (ENG19ME0043), Vinay K C (ENG19ME0044), Vinay S (ENG19ME0045) and Shashank N (ENG18ME0058), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Mr. Sandeep MJ**

Guide

**Dr. Vinayak B Hemadri**

Chairman, ME

**Chairman**  
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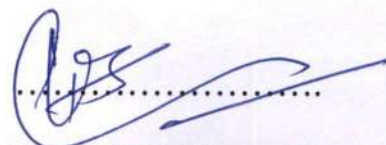
## Certificate

This is to certify that the Mini Project entitled “**Hybrid 3d Printed hand Exoskeleton for paralyzed person**” submitted by, Abhilash H S (ENG20ME1001), Abhishek B Hiremath (ENG20ME1002), Anis Hesrur (ENG20ME1003) and Faisal Pasha (ENG20ME1006) , in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.



**Mr. Sandeep MJ**

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## **Certificate**

This is to certify that the Mini Project entitled “**Numerical simulation and experimental study of wear and contact pressure distribution of LM 13/zircon/carbon MMC Pin on isc tribometer**” submitted by, Faizan Ahmed (ENG19ME0016), Hanif Sadiq (ENG19ME0018), Slevyn Jonathan Gilbert (ENG19ME0035) and Syed Mohhamad Akbar (ENG19ME0041), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

  
.....  
**Mr. Ravitej**

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## Certificate

This is to certify that the Mini Project entitled “**Virtual labs for mechanical engineering**” submitted by, Dhrruva Krishna Nikhil (ENG19ME0014) Dhrruva Dev Nikhil (ENG19ME0013), D Varun (ENG19ME0010) and Karthik S (ENG19ME0019), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Ms. Sudha Deepthi**

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## Certificate

This is to certify that the Mini Project entitled “**mechanical and corrosion characterisation of chromium free filler material for austenitic stainless steel**” submitted by, Raghavendra R M (ENG18ME0043), Akash D (ENG19ME0003) Vishu GK (ENG19ME0047) and Nischal Chimka (ENG19ME0024), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

Mr. Karthik S B

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## **Certificate**

This is to certify that the Mini Project entitled “**Casting and mechanical characterization of aluminium alloy foams using recycle barrage cans and industrial waste**” submitted by, Sharan Raghavendra (ENG19ME0030), Prasad (ENG20ME1015), Lalith Sagar (ENG20ME1009) and Ram Hruday P (ENG19ME0028), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Mr. Karthik SB**

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## Certificate

This is to certify that the Mini Project entitled “**NDT on CFRP laminates**” submitted by, Kruthika SM Reddy (ENG19ME0021) and Sheetal D (ENG19ME0034), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru,** during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Vishwanathan R**

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## Certificate

This is to certify that the Mini Project entitled “**Non-linear response of shape memory alloy embedded in a composite**” submitted by, Chandramouli M (ENG19ME0008), Abhishek Vijeth (ENG19ME0002) and Sai Soorya Natiyala (ENG19ME0031), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Rammohan B**

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## Certificate

This is to certify that the Mini Project entitled "**Prediction of Mechanical Behaviour of FML Using 2 point correlation and support vector machine supervises machine learning algorithms**" submitted by, Dhanush Koundinya M (ENG19ME0012), Anujith J (ENG19ME0005), Subramanya HV (ENG19ME0036) and Adhesh Suryatej N (ENG17ME0003), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Mr. Shashikant**

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## **Certificate**

This is to certify that the Mini Project entitled “**Rivora water quality monitoring using a specially designed drone**” submitted by, Sujith C (ENG19ME0038) N Pruthvinag (ENG19ME0023) Chandrajeeth Singh (ENG19ME0007) and Bharath R (ENG19ME0006), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

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## Certificate

This is to certify that the Mini Project entitled “**Process optimization of thermal gasification using machine learning**” submitted by, Vedhanth Murali A (ENG19ME0042), Sairam V Shetty (ENG19ME0032), Rishabhadya Raju (ENG19ME0029) and Chetan Sai SG (ENG19ME0009), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

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## Certificate

This is to certify that the Mini Project entitled “**Design and transmissibility investigation of shock absorber using MATLAB FFT**” submitted by Parikshith KR (ENG20ME1013), N Kiran Kumar (ENG20ME1012) , Sindhu Kumar K (ENG20ME1018) and Sanjay Swaraj B (ENG20ME1017) , in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University**, Bengaluru, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

*Manish*

.....  
**Dr. Manish Kumar Mishra**

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## Certificate

This is to certify that the Mini Project entitled “**Experimental evaluation of mixed mode fracture in advanced ceramic matrix composites**” submitted by Kaushik T (ENG19ME0020), Prem kiran (ENG19ME0027), Praveen (ENG19ME0026) and Abhishek S M (ENG19ME0001), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Shashidhar LC**

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## Certificate

This is to certify that the Mini Project entitled “**Mechanical Performance sandwich composite with additively manufacture prismatic course structure**” submitted by Schenit Paul (ENG19ME0033), Suraj MS (ENG19ME0039), Anandhu Mohan (ENG19ME0004) and Manohar R (ENG19ME0022), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Kamal Babu**

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## Certificate

This is to certify that the Mini Project entitled “**Design and Fabrication of Automated seed sowing machine**” submitted by, Jayanth S P (ENG20ME1007), Mahesh S (ENG20ME1010), Uday J (ENG20ME1019) and Yogin M S (ENG20ME1020), in partial fulfilment of the requirements for academic curriculum of 3<sup>rd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru,** during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Mr. Abhilash O**

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## Certificate

This is to certify that the Mini Project entitled “**Compliant Mechanisms in Space Applications**” submitted by SIDDARTH B JAIN (ENG20ME0017), SIDDHARTH SEETHARAMAN (ENG20ME0018), VENKATESH C L (ENG20ME0019) and ARBAZ S (ENG21ME1001), in partial fulfilment of the requirements for academic curriculum of 2<sup>nd</sup> year in **Mechanical Engineering** is a bonafide record of the work carried out at **School of Engineering, Dayananda Sagar University, Bengaluru**, during the academic year 2021-2022. The Mini project report has been approved as it satisfies the academic requirements for the Mini project prescribed for the B. Tech degree.

**Dr. Rammohan B**

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