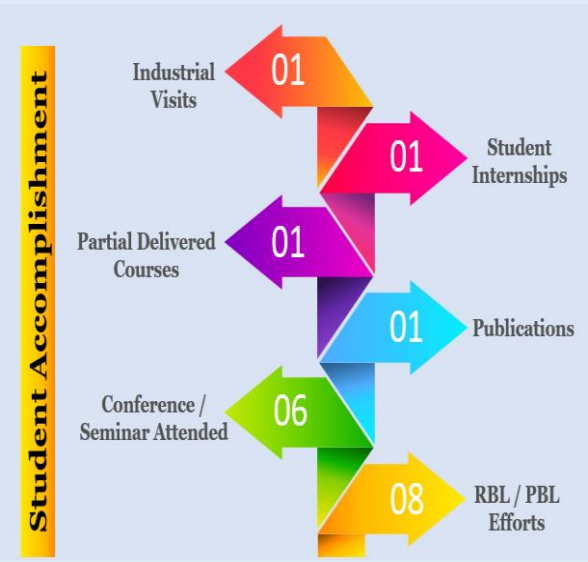
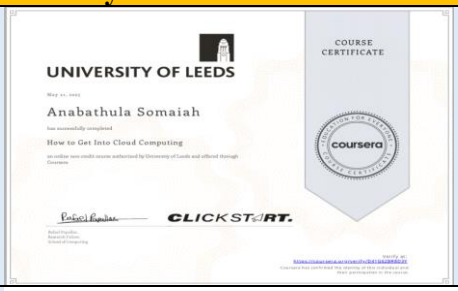
DEPARTMENT OF MECHANICAL ENGINEERING

PORTFOLIO - MAY 2025



Faculty MOOC's Certifications



FDP's Attended


Electronics & ICT Academies
MNIT Jaipur, NIT Patna, IIT Roorkee, IIT Guwahati, IIITDM Jabalpur, NIT Warangal

Faculty Development Programme on
Quantum Technologies & Applications
February 28 - March 22, 2025

Certificate of Completion

This is to certify that Mr. M Sunil Kumar of Institute of Aeronautical Engineering has successfully completed the 40 hours (3-Credits equivalent) Faculty Development Programme jointly organized by various Academies. During the period, we found her / him to be hardworking, sincere and committed. Her / His performance was Good. This programme is funded by MeitY and endorsed by DST - NQM / AICTE / UGC .

M. P. Singh, Jt-Principal Coordinator | Sanjeev Manhas, Jt-Principal Coordinator | Dip Prakash Samajdar, Jt-Principal Coordinator | Gaurav Trivedi, Jt-Principal Coordinator
P. Radha Krishna, Jt-Principal Coordinator | Vithal Madyalkar, Program Director IBM-ICE | Mahipal P. Jadeja, Jt-Principal Coordinator | Pilli Emmanuel Shubhakar, Principal Coordinator

MNIT/QTA/465/2025


Electronics & ICT Academies
MNIT Jaipur, NIT Patna, IIT Kanpur, IIT Roorkee, IIT Guwahati, IIITDM Jabalpur, NIT Warangal

Faculty Development Programme on
QT-03 Basics of Quantum Programming
May 16 - June 07, 2025

Certificate of Completion

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M. P. Singh, Jt-Principal Coordinator | Sanjeev Manhas, Jt-Principal Coordinator | B. V. Phani, Jt-Principal Coordinator | Shivansh Mishra, Jt-Principal Coordinator | Gaurav Trivedi, Jt-Principal Coordinator
P. Radha Krishna, Jt-Principal Coordinator | Vithal Madyalkar, Program Director IBM-ICE | Vikash Kumar, Jt-Principal Coordinator | Pilli Emmanuel Shubhakar, Principal Coordinator

MNIT/HQP/513/2025

Guest Lecture Conducted

A guest lecture on the SAE Bicycle Design Challenge delivered by Dr. B Varun Kumar on 24 & 25 May,2025 to provide a comprehensive understanding of Bicycle design, suspension systems, focusing on their role in its dynamics, ride comfort, and handling. It covers various types of suspension systems, design methodologies, modelling techniques, and real-world testing practices

Faculty / Student Paper Publications


Reinforced Plastics
ISSN: 0034-3617

Experimental Investigation of Fatigue Behavior in Materials Using a Rotating Bending Test

G. Hima Bindu[1], P. Yashwanth[2], P. Dinesh Kumar[3], A. Hitesh[4], G. Vishnu Vardhan Reddy[5], and Jatoth Heeramun[6]*

[1]Assistant professor, Department of Mechanical Engineering, Institute of Aeronautical Engineering, Hyderabad -500043, Telangana, India.
[2,3,4,5]Students of Mechanical Engineering Department, Institute of Aeronautical Engineering, Hyderabad - 500043, Telangana, India.
[6]School of Mechanical Engineering, Lovely Professional University, Phagwara-144411, Punjab, India.
*Corresponding Author: Jatoth Heeramun (heeramunj@gmail.com)

HIGHLIGHTS

- *Analyzed the fatigue life characteristics of EN19, EN354, and EN36C alloys using a rotating beam fatigue tester.*
- *Probabilistic Fatigue Assessment Employed an advanced Bootstrap methodology and virtual subsample enhancement.*
- *Derived an advanced statistical technique for fitting S-N curves with life distribution data and limited-sample fatigue data.*
- *Investigated fatigue strength of several alloy steels subjected to cyclic loading and influence of notch size on this property.*
- *The results elucidate methods for predicting fatigue failure in essential mechanical components used in construction and heavy machinery.*

Abstract: A mechanical machine needs to consider effect of cyclic stress to avoid failures, the machine considered in this work is rotating beam fatigue tester to know the fatigue life of EN19, EN354, EN36C alloy materials Large scale mechanical equipment's service integrity can only be guaranteed by probabilistic fatigue evaluation, nevertheless, in real engineering, probabilistic fatigue models combined with multiaxial stress circumstances and tiny sample information features are still insufficient As a result, the virtual subsample augmentation technique is in combination with the enhanced Bootstrap technique to provide a generic probabilistic fatigue assessment procedure. In particular, the small sample is first expanded using the random sample regeneration method. sample fatigue data is combined with life distribution data at various stress levels. The integrated approach is used to fit the S-N curve, which is based on the backwards statistical inference method. information about life dispersion. Furthermore, a novel fatigue damage metric grounded in the inhibition A function is suggested to forecast tiredness to alter the curve. In the interim, alloy steel with various notch sizes needs to undergo a fatigue test for various materials, including EN19, EN354, and EN36C alloy. The findings demonstrate how the size and notch. This apparatus demonstrates material's fatigue strength after repeated loads at different stress levels, fatigue properties of a material evaluated by subjecting it to a stress level under its ultimate strength. Stress cycles are used to examine aspect of repeated exposure to diverse pressures on machine components, the performance of EN19, EN354, and EN36C alloys is analysed herein.

Keywords: Fatigue Life Prediction, Material Fatigue Behavior, Applied Load vs. Fatigue Cycles, Stress Strain Analysis, Fatigue Failure Mechanism.

INTRODUCTION

The predominant studies analyzed used a rotating beam fatigue tester as their primary instrument [1-3], researchers may determine the longevity of materials under various loads by using this equipment to subject specimens to cyclic loading in a controlled setting [3–4] Despite variations in the kinds of rotating beam fatigue tests used in various investigations, the fundamental concept remains consistent: expose a specimen to a regulated rotating bending force until failure occurs [9]. To elucidate the relevant criteria for conducting such tests, it is essential to establish a standard [5-6]. A significant aspect influencing fatigue behavior is the loading frequency [4]. It is essential to specify the specific frequency used in each study and provide an appropriate reference. An alternative is to use real-time monitoring of the test to track stress, strain, and other relevant indicators as they transpire [7-8]. This kind of monitoring would enhance the precision and thoroughness of the study [9-10]. Almost any scrap may be examined to show that yield strength of material is often exceeded at stresses lower than those at which breakdowns occur. "Fatigue" is name given to this intricate occurrence. Up to 90% of in-service part failures in

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Student Seminar Attended


SAEINDIA SOUTHERN SECTION

Workshop on
SAEISS 7th Edition Bicycle Design Challenge 2025-26
Certificate of Participation

This is to certify that

JOSHNA JAKKULA

CHAKRADHANVI-IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

*has participated in the **Workshop on SAEISS 7th Edition Bicycle Design Challenge 2025-26** held at Velammal Institute of Technology, Chennai, during 24th & 25th May 2025.*

Dr. B. Varunkumar
Champion BDC 2025-26

Mr. Dinesh Shyamsundar
Chairman-SAEISS


SAEINDIA SOUTHERN SECTION

Workshop on
SAEISS 7th Edition Bicycle Design Challenge 2025-26
Certificate of Participation

This is to certify that

TARUNI CHAKRAWARTHY

CHAKRADHANVI-IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

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Chairman-SAEISS


SAEINDIA SOUTHERN SECTION

Workshop on

SAEISS 7th Edition Bicycle Design Challenge 2025-26

Certificate of Participation

This is to certify that

SHIVA SAI MANIKANTA MALOTH

CHAKRADHANVI-IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

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Chairman-SAEISS


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Certificate of Participation

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NAGARAJU MUDIDE

CHAKRADHANVI-IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

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Chairman-SAEISS


SAEINDIA SOUTHERN SECTION

Workshop on

SAEISS 7th Edition Bicycle Design Challenge 2025-26

Certificate of Participation

This is to certify that

HIMAJA VATTIKONDA

CHAKRADHANVI-IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

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SAEISS/BDC/2025-26/W/025


SAEINDIA SOUTHERN SECTION

Workshop on

SAEISS 7th Edition Bicycle Design Challenge 2025-26

Certificate of Participation

This is to certify that

SHAILAJA KAIRI

CHAKRADHANVI-IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

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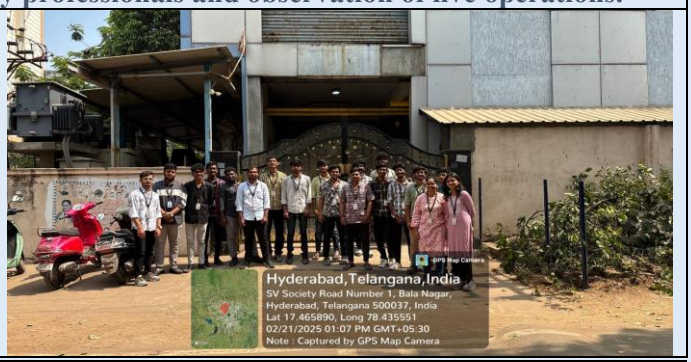
Dr. B. Varunkumar
Champion BDC 2025-26

Mr. Dinesh Shyamsundar
Chairman-SAEISS

Industrial Visit

Students visited Hyderabad Dies and Moulds on 02 May 2025, industry to gain practical exposure to real-world engineering applications and manufacturing processes. The visit enhanced their understanding of theoretical concepts through interaction with industry professionals and observation of live operations.



RBL Products Developed

1. Robotic Solar Panel Cleaner
2. LPG Gas Detector
3. Design of Exosuit – A Robotic Skeleton Arm
4. Automatic Rain Detection and Cloth Collection
5. Figure Replacement Device
6. Anti-Sleep Detector by Using Arduino

Student Internship

Mithin Raghava final year student has been selected for Zenith Energy, Hyderabad as intern for the period of six months from March to August 2025.

ZENITH ENERGY

Date: 24/03/2025

To,
The Head of the Department
Institute of Aeronautical Engineering
Dundigal
Hyderabad 500043

Subject: Extension of Internship Byoani Mithin Raghav

Dear Sir/Madam,

We are pleased to inform you that Byoani Mithin Raghav, a student of Mechanical Engineering (Roll No: 21951A03I8), has shown exemplary performance during his internship at Zenith Energy Services Pvt Ltd under our Energy Efficiency program. Consequently, we have decided to extend his internship for an additional three months.

The new period of the internship will be from 20th April 2025 to 20th June 2025. The intern will continue to work from 10 AM to 6 PM during this extended tenure. We have ensured that this extension will not interfere with his academic responsibilities and have aligned his tasks to further enhance both his educational and professional development.

We kindly request your approval for this extension and any necessary permissions required for the student to continue his internship in the aforementioned period. Please feel free to contact us should you need further information or clarification regarding this extension.

Thank you for your continued cooperation and support in fostering an enriching environment for the student.

Yours sincerely,

Sindhu Jannareddy
Managing Director
Zenith Energy Services Pvt Ltd