MECHBYTES

NEWSLETTER OF MECHANICAL ENGINEERING DEPARTMENT

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Academic Activities

- Student Chapters
- Workshops/Seminars/Webinars & Expert Talks
- Field Visits
- Training & Placement

Faculty Initiatives

- Paper/ Journal Publications
- Workshops/ Seminars / Expert Talks Attended

Student's Corner

- Alumni Achievements

Editors (Faculty):

Mr. Swapnil Ramani

Mr. Tanay Rege

Editor (Student):

Mr. Ayres Pascoal Pereira

VISION

To evolve as a Centre of Excellence in Mechanical Engineering with a strong Industry Connect, ensuring engineers with a global perspective and professional ethics, thus adding value to society

MISSION

- To ensure proficiency in academics with emphasis on fundamental concepts and problem solving leading to practical applications in the field of Mechanical Engineering
- To provide state of the art Training in collaboration with reputed industries and institutions focussing on interdisciplinary domains
- To engage in Research, Consultancy services and promote community outreach initiatives
- To promote Faculty Development through Quality Improvement Programs and Research

PROGRAM EDUCATIONAL OBJECTIVES (PEO'S)

- Graduates will apply Engineering Knowledge and demonstrate the requisites skills to meet challenges in the field of Mechanical Engineering.
- Graduates will adapt to the technological advances and relevant softwares in the industry.
- Graduates will acclimatize to real time Industrial Systems, Standards and Professional Engineering Practices.
- Graduate will exhibit Strong Values, Work Ethics, Positive Attitude, Managerial Skills and Team Work will concern for the society.

PROGRAM SPECIFIC OUTCOMES (PSO'S)

- Graduates will be able to demonstrate knowledge of Maintenance Engineering Practices, Industrial Automation Tools and standard Softwares in Mechanical Engineering and related areas.
- Graduates will be able to correlate knowledge of Mechanical Engineering and allied fields with Industrial Processes, Practices and Standards through field visits, Internships and other intervention

ACADEMIC ACTIVITIES

STUDENT CHAPTERS

MECHANICAL ENGINEERING STUDENTS HUB (MESH)

The Inaugural ceremony of the Mechanical Engineering Students Hub (MESH) for the year 2022-2023 was held on 10th September 2022. The Chief Guest for the function was Mr. Jayaprakash P. V., Head of Engineering, Head of Center of Excellence - Iron Ore Goa, Vedanta Ltd, Guest of Honour Mr. Viraj Naik, Finance Manager, IFB Ltd. Also present were Dr. Neena Panandikar (Principal), Fr. Kinley D'Cruz (Director), and Mr. Ajit Salunke (HOD Mechanical Engineering Department).

Mr. Jayaprakash P. V. (Chief Guest) - spoke about the changing trends and evolution of the Green Steel and the future scope of mechanical engineers in the area of reduction of carbon emission standards. Mr. Viraj Naik- Guest of Honor emphasized the role of finance in life and motivated students to start investing at a very young age. Principal Dr. Neena Panandikar lauded the achievements of the students of previous MESH Council and encouraged students to learn about the new emerging technologies in the area of Machine Learning, AI etc. Director Fr. Kinley D'Cruz shared his great thoughts and motivated to conduct several such events to build organizing and leadership qualities.

Prof Ajit Salunke appreciated the efforts put by the students of the MESH council and gave an overview of the events held by the Mechanical Department, Industrial visits and the workshops held during the year. Prof. Sanjeel Naik, Student-Coordinator MESH briefed about the MESH Chapter and the events carried out by MESH in the last year.

The new MESH council consisting of Chairman- Mr. Kaushik Varma Secretary- Mr. Bosco Medeira, Treasurer- Mr. Aden Gomes, Editor- Mr. Ayres Pereira, Student Executive Members- Mr. Xavier Furtado & Mr. Prathamesh Chandgadkar.

Mr. Kaushik Verma, MESH Chairman proposed the vote of thanks. The program was coordinated by the MESH Coordinators Mr. Sanjeel Naik & Dr. Suraj Marathe.

INSTALLATION OF CHAPTER WORKING COMMITTEE OF ISHRAE DBCE STUDENTS CHAPTER 2022-23

The Mechanical Engineering Department of Don Bosco College of Engineering installed the Chapter Working Committee of the ISHRAE (Indian Society of Heating Refrigeration and Air Conditioning Engineers) DBCE Students Chapter for the Academic Year 2022-23 on 27th August 2022. The Event was graced by the Chief Guest Mr. Balkrishna Chodankar (President ISHRAE Goa Chapter), Guest of Honour Dr. Anirudha Ambekar (Assistant Professor, IIT Goa), Rev Fr. Kinley D'Cruz (Director , DBCE), Prof Ajit Salunke (HOD – Mechanical, Faculty advisor, ISHRAE DBCE Student Chapter) and other dignitaries from ISHRAE Goa Chapter which included Mr. Rupchand Aldonkar (President Elect ISHRAE Goa Chapter), Mr. Sunil Shetye (Past president ISHRAE Goa Chapter), Mr. Mohnish Borker (Student Chair, ISHRAE Goa Chapter).

The program started off with a keynote address by Dr. Anirudha Ambekar on 'Energy and Environment: Understanding the Landscape'. Dr. Anirudha while explaining about energy, its consumption patterns, environmental impacts and the need to develop direct mitigation techniques, threw light on the challenges faced by our society to continue on the path of development while eliminating the negative effects associated with the current sources of energy. Dr. Anirudha added, "A balanced strategy where combustion technology is unitized synergistically with renewable and alternate fuels would be ideal."

The National Anthem was sung at 4:00 pm followed by a welcome address by Prof Ajit Salunke highlighting the various activities carried out by the chapter and congratulating the students for excelling in the various competitions organized by ISHRAE. Rev Fr. Kinley D'Cruz addressed the event by stating with quote "If you believe it will work out, you will see Opportunities. If you believe it won't, you will see obstacles", urging the students to make the best use of the chapter for their academic growth and career prospect. The Chief Guest Mr Balkrishna Chodankar congratulated the DBCE Students Chapter for being one of the most active and vibrant student chapters and addressed the theme for the year "Prithvi, Paryavaran, Parivartan".

The Installation of Chapter Working Committee was initiated by Student Chair of IGC, Mr. Mohnish Borker by administrating the oath to the newly elected Chapter Working Committee, comprising of Ms. Ayisha Shaik– President, Mr. Aditya Lotlikar – President-Elect, Mr. Trish Dourado – Secretary, Mr. Omkar Naik – Treasurer, CWC members, Mr. Aires Sousa, Mr. Rio DE Mello and Mr. Pratik Borkar.

The event concluded with Mr. Aditya Lotlikar, President-Elect ISHRAE DBCE Students Chapter, proposing the vote of thanks. The event was attended by Third and Second year mechanical students of Don Bosco College of Engineering. The event was compered by Mr.Adarsh Chodankar.

ONE DAY DEPARTMENT LEVEL PROJECT COMPETITION NIRMANA -2022

The Mechanical Engineering Department of Don Bosco College of Engineering organized 'Nirmana 2K22' project exhibition & competition on 10th September 2022 to provide an opportunity for students to showcase their innovative projects. The expo was inaugurated by the Chief Guest, Mr. Jayaprakash P. V., Head of Engineering, Head of Center of Excellence - Iron Ore Goa, Vedanta Ltd. at 10.15 am. Mr. Viraj Naik, Chartered Accountant, Finance Manager, IFB Industries Ltd. was the Guest of Honor. Fr. Kinley D' Cruz, Director, Dr. Neena Panandikar , Principal, Prof. Ajit Salunke, HOD and other faculty members were present.

Various innovative ideas were conceptualized in the areas of Robotics, Automation, Artificial Intelligence/ Machine Learning, Fluid Engineering, HVAC, 3 D printing etc. and have been developed as successful prototypes for applications like Agriculture, Healthcare, Mobility, Condition Monitoring, Defense, Ergonomics, Sports etc. Many of the projects have been sponsored by Goa State Innovation Council.

The projects which were displayed are Drone for precision spraying of pesticides on coconut trees, Automated seed sowing machine, Gripper for Soft Robotic Application, Oxygen Concentrator, Exoskeleton for Assistance in Walking, Fire Extinguishing Action Rover, Landmine detecting robot, Wind powered system to save crops from birds, Automatic 2D Thermocol Cutting Machine, etc.

The event Convenor was Prof. Ajit Salunke, HOD-Mechanical Department and Dr. Suraj Marathe, Associate Professor, Prof. Avil D'Sa and Prof. Sanjeel Naik were the organising secretaries. Prof. Sooraj Mohan and Prof. Aniket Naik were the coordinators. The judges were Prof. Raghuvir Chary, Govt. Polytechnic Panjim, Mr. Yogesh Tarcar and Mr. Mayur Shetti.

WORKSHOPS/ SEMINARS / WEBINARS & EXPERT TALKS

TECH TALKS: EDGING TOWARDS A CONNECTED FUTURE

Tech Talks: Edging towards a connected future is an educational initiative by Institution Industry Cell at DBCE to promote knowledge in recent technology and systems to faculty and students through technical talks by eminent personalities from industry as well as academia. It was a two days event from on 9th and 10th September 2022. The Mechanical Department organised two sessions for the event.

The first session was delivered by Dr. Sreenath Balakrishnan, Assistant Professor, School of Mechanical Sciences, IIT, Goa on the topic 'Applying Mechanics to Biological Cells'. He explained the importance of mechanics in biology, mechanics of nuclei and analysis using mechanics of membranes. The second session was delivered by Mr. Sumukh Kamat, Manager, Projects Strategic Expansion Programmes, CommScope on the topic 'Importance of Project Management and basics to successfully handle the projects'. He explained about the qualities required to be a great project manager, types of project management approaches, Agile & Waterfall project management, stages of project management along with the required tools and also showcased some real life case studies which he has worked on in the past. Around 60 students attended the program.

The event was compered by second year student of the department Mr. Rio DeMello. The coordinators for the program were Mr. Sanjeel Naik and Mr. Saurabh Raikar.

AUDIT COURSE IN MAINTENANCE ENGINEERING

The Department of Mechanical Engineering held its guest lecture in Audit Course in Maintenance Engineering for the academic year 2022-2023, on 13th October 2022 from 12:15 pm to 1:15 pm. The Session was delivered by Mr. Rajendra Naik, Marine Chief Engineer, on "Maintenance job as a Marine Engineer".

The guest lecture was held in TE Mechanical classroom. 55 participants from the Third Year Mechanical Engineering students and Faculties from Mechanical Department attended the

session. The event was hosted and coordinated by Prof. Aniket Naik. Prof. Aniket Naik welcomed the participants and gave a brief introduction about the resource person.

Mr. Rajendra initiated the session by addressing the current job opportunities and growth as a Marine Engineer post BE in India and around the world. The lecturer explained the procedures and examinations to be answered to get enrolled in a Maritime institute within and outside Goa.

The lecturer explained the working principle and maintenance of diesel engines components such as bed plate cylinder head and exhaust head, frames, liners, crankshaft, piston, piston rings, generators, fuel pumps, fuel system, starting air system, lubrication system, governor, oil mist detector, crankcase relief door etc, on board of tanker ships.

Mr. Rajendra Naik's delivery on the subject was on point. He kept the entire session very interactive and made sure that all queries from the student's side were answered. Students gained valuable knowledge in the area and substantial number of students showed interest in pursuing marine engineering post BE.

AUTOCAD SESSION- CONDUCTED UNDER BEYOND CURRICULUM ACTIVITY FOR FE MECH

The department of Mechanical Engineering of Don Bosco College of Engineering organized a half-day session on "Introduction to AUTOCAD" Session-II for the first year Mechanical Engineering students on 10th December 2022 from 2.00-4.00 pm in the Mechanical CAD lab.

The resource persons were in-house faculty members from Mechanical Department, Prof. Saurabh Raikar and Prof. Sanjeel Naik.

Prof. Sanjeel Naik and Prof. Saurabh Raikar delivered a session on "Drawing using AutoCAD" where the students were given hands on practice to use different commands and prepare the 2-D drawings, the Graphical User Interface and basic drawing, dimensioning and

clipping commands. They practiced with simple 2D engineering objects. 31 students attended the session. Mr.Diptesh Naik, Lab assistant assisted the resource persons for the smooth conduction of the session.

The workshop was coordinated by Prof. Sharad Shanbhag with constant support and guidance from Dr. Kala Nayak, Professor & Head of Department of Science & Humanities, Registrar, Prof. Harison Cota, Assistant Professor – Deputy Head of Science & Humanities Department and Prof. Ajit Salunke; HOD – Mechanical Department

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FIELD VISITS

VISIT TO NETZSCH TECHNOLOGIES INDIA PVT LTD AND ASTRA METALS PVT.

Third Year Mechanical Engineering students of Don Bosco College of Engineering, Fatorda visited Netzsch Technologies India Pvt Ltd, and Astra Metals Pvt. Ltd. in Verna Industrial Estate on October 07, 2022

The visit was organized in association, Mechanical Engineering Student Hub (MESH) and coordinated by Dr. Suraj Marathe and Mr. Chetan Gaonkar.

At Netzsch Technology Pvt. Ltd which manufactures highly customized pumps that are used in industrial application. The students were briefed about the products of the company by Mr. Ashutosh Bandodkar, Senior Manager- Customer Service and Planning. Later they were introduced to major departments of manufacturing of pump such as material inspection, machining, assembly, and store. The students were also briefed about the various processes for material inspection and working of vertical and horizontal CNC machines. Whirling operation of rods was also shown. Various parts such as rotor, stator manufacturing and assembly were also shown. The students were guided by Mr. Malappa Pujari, Production Engineer and Mr. Somnath Surlakar, Senior Production Engineer.

Astra Metals Systems Pvt. Ltd is an end-to-end solutions provider for Precision Sheet Metal Works including fabrication and assembly. The students were exposed to the different sheet metal operations carried out in the industry. Students got an opportunity to see the operations such as Punching, Bending, Laser cutting, Fabrication and Powder metallurgy process. The students were guided by Mr Murad Abdul Mullah, Director and Mr. Dipesh Narvekar, Quality Head.

Overall it was a very enlightening and learning experience for the students of TE Mechanical.

TRAINING & PLACEMENT

The Students' batch of 2018-2022 received a remarkable response for placements from 60 core companies and 9 IT companies. With 44 of our students already placed and excelling in renowned companies, 16 more of our ambitious students are placed at leading companies successfully establishing themselves in the workforce.

- With an aim to deliver sustainable solutions that enable people to make the most of life's essential resources, 4 of our students – Mr. Gurudas Sanjay Naik, Mr. Seattle Rodrigues, Mr. Amey Tilve and Mr. Rehan Shaikh have accepted job offers at Pentair Water India Ltd.
- With Siemens promising global opportunities, Mr. Rikhit Yeshwant Rao landed his first job in this prestigious company.
- Mr. Chiranjiv Daipule has been successfully placed at The Perfect Knot, while Mr. Siddharth Naik has secured a job at Coca Cola.
- Mr. Abhishek Tari, Mr. Amogh Deepak Khandolkar and Mr. Kuldeep Naik have been provided opportunities to grow as professionals at Astra Metals.
- Mr. Rohit Korgaonkar has landed his first job at IFB.
- ION Exchange, one of the prominent water and environment management solution companies, has offered exciting job opportunities to Mr. Siddhit Naik.
- Mr. Noronha Ronan Arvino Saude, Mr. Dos Remedios Abilton and Mr. Rodrigues Samuel have commenced their careers at Schiffer and Menezes India Pvt. Ltd., a leading manufacturer and supplier of toothbrushes.
- Mr. Raj Telang has been selected and successfully placed at Putzmeister India Pvt. Ltd.

FACULTY INITIATIVES

PAPER/ JOURNAL PUBLICATIONS

Sr . No.	Author Name	Title of Paper	Details of Journal name, volume, series, year/ Conference Details	National/ International
1.	Chetan Gaonkar	Double-tuning and experimental validation of rotated-offset inlet-outlet circular chamber muffler	International Journal of Applied Acoustics. Volume 197, August 2022	International Journal CiteScore : 5.6 Impact Factor 3.614
2.	Avil Dsa	Tribological aspects affecting surface durability of tooth sum altered spur gears : A load shearing approach	Advances in Technology Innovation (*Accepted and to be published)	International Journal CiteScore : 1
3.	Dr. Sooraj Mohan	Performance and emissions of biodiesel engine with hydrogen peroxide emulsification and cerium oxide (CeO2) nanoparticle additives	Fuel, 319, 123872, July, 2022	International CS – 11.2 IF – 8.035
4.	Dr. Sooraj Mohan	Influence of hydrogen peroxide emulsification with gasoline on the emissions and performance in an MPFI engine	International Journal of Hydrogen Energy, 47, pp. 25034-25043, August, 2022	International CS – 10.0 IF – 7.139
5.	Dr. Sooraj Mohan	Thermal decomposition and kinetics studies of solid ammonium carbonate for use in SCR systems	Chemical Papers, 76 (10), pp. 6551-6556, October, 2022	International CS – 3.1 IF – 2.146
6.	Dr. Sooraj Mohan	On reducing the emissions of CO, HC, and NOx from gasoline blended with hydrogen peroxide and ethanol: Optimization study aided with ANN-PSO	Environmental Pollution, 310, 119866, October, 2022	International CS – 12.7 IF – 9.988

WORKSHOPS/SEMINARS/EXPERT TALKS ATTENDED

Sr. No	Seminar/Workshop/ Short Term Courses/ Conferences/ Training Programmes etc.	Date	Duration	Organization	Name of the Staff Participated
1.	2 days physical training on Energy Simulation	18th - 19th August 2022	Full day	State Designated Agency (SDA), Electricity Dept, BEE, MoP and AIILSG	Prof. Sooraj Mohan
2.	11th R&D Knowledge Sharing Session under the R&D cell. Prof. Sooraj presented on Exhaust Gas Emissions	24th Sept 2022	½ day 3.30-4.30 pm	DBCE	Dept faculty Members.
3.	8- Week NPTEL course on Power Plant Engineering	July-Sept 2022	8 week	IIT Roorkee	Prof. Sharad Shanbhag
4.	8- Week NPTEL course on Refrigeration and Air-Conditioning	July-Sept 2022	8 week	IIT Roorkee	Prof. Sharad Shanbhag
5.	One week FDP on Recent Trends in Mechanical Engineering	8th – 16th Aug 2022	One week	College of Engg & Research, Sangola	Dr. Suraj Marathe
6.	Innovation Ambassador Training “Advanced Level” in online mode	-----	15 sessions of 30 contact hrs	MoE’s Innovation Cell & AICTE	Dr. Suraj Marathe

7.	12- Week NPTEL course on Applied Thermodynamics	July-Oct 2022	12 Week	IIT Guwahati	Prof. Sharad Shanbhag
8.	12- Week NPTEL course on Human Factors Engineering	July-Oct 2022	12 Week	IIT Kharagpur,	Prof. Sanjeel Naik
9.	IUS south Asia Continental Conference & Workshop for IUS Rectors, Principals and Directors under the theme "Salesian Leadership in Higher Education Ministry	28th Nov-2nd Dec 2022	5 days	Citadel, Salesian Provincial House, Chennai	Prof. Ajit Salunke
10.	3 week Training on operation and maintenance of 3-axis HAAS CNC Mill	18th July-6th August 2022	3 week	Turbocam India Pvt. Ltd, Goa	Mr.Diptesh Naik, Mr. Johnson Vaz
11.	Talk on Energy Conservation on "Energy Conservation Day"	14th Dec 2022	6.30-8.00pm	IEI Goa state Centre	Prof. Sharad Shanbhag Prof. Aniket Naik

FACULTY ACHIEVEMENTS

PROF. SHARAD SHANBHAG EXCELS IN NPTEL COURSES

Mr. Sharad M Shanbhag, Assistant Professor from Mechanical Engineering Department received two certificates of appreciation from National Programme on Technology Enhanced Learning (NPTEL).

One of the appreciation certificate was awarded for being recognized as 'NPTEL MOTIVATED LEARNER' for completing 9 technical courses offered by various IIT's in 4 consecutive semesters (Jan 2021, July 2021, Jan 2022, July 2022). He has taken up courses like Applied Thermodynamics (12 week), Power Plant Engineering (8 week), Refrigeration and Air-conditioning (8 week), IC Engines and Gas Turbines (12 week), Manufacturing Automation (4 week), Energy Conservation and Waste heat recovery (12 week), Product Design and Development (4 week), Non-Conventional Energy Resources (12 week) and Theory and Practice of Nondestructive Testing (8 week).

Out of these 9 courses he was among the 5% topper in 3 courses with ELITE+ Gold and ELITE+ Silver certificate, among 2% topper in 1 course with ELITE certificate, among 1% topper in one course with ELITE+ Gold certificate and topper in 2 courses with ELITE+ Gold and ELITE+ Silver certificate. The other 2 courses he has completed with ELITE certificate. He has completed 10 NPTEL courses in total in past 3 years.

STUDENT CORNER

ALUMNI ACHIEVEMENTS

Mr. Evarard Leitao, Alumnus of Mechanical Department, DBCE (2018 - 2021 batch) has been selected as “Stress repair engineer” at Airbus, UK. He completed his MSc in Aerospace from Cranfield University, UK.

Miss. Malaika Gajanan Korgaonker Alumnus of Mechanical Department, DBCE (2018 - 2021 batch) has been selected for Master of Science in Mechatronics and Intelligent Machines program from University of Central Lancashire, UK.

ARTICLES

ROLE OF MECHANICAL ENGINEERS IN INDUSTRY 4.0

By Mr. Ayres Pascol Pereira

The industrial world faces challenges rapidly, altering it. The essential resources are finite and we all need to do more with less. From an engineer's standing point, the latest industrial revolution requires a different approach.

With emergence of Industry 4.0, the mechanical engineering industry is going through a tremendous digital transformation. Industry 4.0 depends heavily on Mechanical engineers for its evolution, in its attempt to connect physical and digital, it's adaptation into best practices and its endeavour towards efficiency and sustainability. It is important to know that Industry 4.0 is a manufacturing revolution and by that very nature, its successful implementation and evolution will depend greatly on Mechanical engineers for their skills and innovative approach.

The role of Mechanical engineers in the latest industrial revolution is powered heavily in design, development and maintenance of advanced manufacturing systems and equipment. This includes the integration of advanced technologies such as robotics, automation, artificial intelligence and the Internet of Things into traditional manufacturing processes. Mechanical engineers work to optimize the performance and efficiency of these systems while ensuring they are safe and reliable. They also play a key role in the research and development of new technologies and materials that can be used in advanced manufacturing. In addition to this, mechanical engineers may also be used in technology that stimulate and optimise manufacturing processes in a virtual environment before implementing them in the physical world.

The point in favour of mechanical engineers is that it will continue to take a very good understanding of the physical objects, processes and systems to transform them into their digital avatars, capture crucial data points and develop important algorithms for their implementation and control. Therefore Mechanical engineers for Industry 4.0 need attention in the areas like Data science and advanced analytics, Advanced simulation and virtual plant modelling, Data communication and networks and system automation, Digital to physical transfer technologies such as 3-D printing and also the interface between human and machines.