NIRZER

NEWSLETTER OF MECHANICAL ENGINEERING DEPARTMENT

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FACULTY MEMBERS INVOLVED IN COMMUNITY SERVICE DURING ANNUAL MAGH ZATRA AT SHRI SHANTADURGA DEVASTHAN, KAVALE, AS A PART OF COMMEMORATION OF 75 YEARS OF INDIA'S INDEPENDENCE

EVENTS AND ACTIVITIES

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DEPARTMENTAL NEWS

COURSES ATTENDED

Dr. Suraj Rane:

- One-week Short Term Training Programme on "Alternative sources of Energy using Homer" at NITTTR, Goa Centre from 17-21 January 2022.
- Webinar on "AICTE 360° Feedback" at NITTTR, Goa Centre from 8th April 2022.

Dr. Milind Sakhardande:

- 3-days workshop on "Rubrics for Compentency Assessment in the NEP Context" from 3-5 January, 2022 at the NITTTR, Goa Centre.
- 1-week workshop on "Introduction To Electric Vehicles" from 7-12 February, 2022 at the NITTTR, Goa Centre.
- Half-day workshop on "AICTE 360 Degrees Feedback Webinar" on 29th April, 2022 at the NITTTR, Goa Centre.

Dr. Shridhar D. Mhalsekar:

- CCS Rules, FRSR, RTI for Faculty from 14-18 March 2022 at NITTTR Goa Extension Center.
- AICTE 360 feedback (Webinar) on 08th April, 2022 at the NITTTR, Goa Centre.
- National Education Policy (Webinar) on 06th April, 2022 at the NITTTR, Goa Centre.

Dr. B S Manohar Shankar:

- Half-day workshop on "AICTE 360 Degree Feedback Webinar" on 29th April, 2022 at the NITTTR, Goa Centre.
- Half-day workshop Webinar on "National Education Policy" on 06th May,2022 at the NITTTR, Goa Centre.
- 1-week workshop on "Introduction To Electric Vehicles" from 7-12 February, 2022 at the NITTTR, Goa Centre.

Prof. Mahesh Caisucar:

- Energy Efficiency in laboratory from 1-3 February at the NITTTR, Goa Centre.
- Academic Paper Writing and Technical Research Methodology from 30th May to 03rd June 2022 at the NITTTR, Goa Centre.

Dr. Raghavendra D. Naik:

- Half-day workshop Webinar on "National Education Policy" on 06th May,2022 at the NITTTR, Goa Centre.
- Half-day workshop on "AICTE 360 Degree Feedback Webinar" on 29th April, 2022 at the NITTTR, Goa Centre.

OTHER DEPARTMENTAL ACTIVITIES/ NEWS

- **Dr. Mahesh Dhawalikar** has been redesignated as Professor from Associate Professor w.e.f. 11-03-2017.
- **Prof. Mahesh Caisucar** has been redesignated as Associate Professor from Assistant Professor w.e.f. 09-09-2018.
- **Prof. Mahesh Caisucar and Dr. Harichandra Chandekar** represented Goa state for All India Civil Services Badminton Tournament held in Chandigarh in March 2022.

INVITED/GUEST LECTURES

- Dr. Mahesh Dhawalikar, was a resource person for training programme on "Network Techniques in Project Management" for Chowgule Industries Ltd. organised by Society for Industrial and Technical Education of Goa, at Institute of Shipbuilding Technology Goa on 30th March 2022.

PAPERS PRESENTED/ PUBLISHED/BOOK CHAPTERS

JOURNAL PUBLICATIONS

- **Rupesh Kumtekar, Swapnil Kamble, Suraj Rane,** "Integration of TPM, RCM, and CBM: A practical approach applied in Shipbuilding industry", *System Assurances Modeling and Management Emerging Methodologies and Applications in Modelling*, 2022, Pages 389-402

- **Akhil Naik, Mahesh Dhawalikar,** "Isolating Stochastic Component of Energy Demand of Pharmaceutical Industry", *International Conference on Emerging Trends in Mechanical and Industrial Engineering, ICETMIE – 2022*- 98, 4-5 March, 2022. Has been considered for Publication in LNME (Lecture Notes In Mechanical Engineering) Springer Nature.

- **Harichandra Chandekar, Vikas Chaudhari and Sachin Waigaonkar, "**Theoretical models for stiffness prediction of short fibre composites", *Materials Today: Proceedings*, Volume 57, Part 2, 2022, Pages: 711-714. (Available online 19 February 2022) doi: https://doi.org/10.1016/j.matpr.2022.02.177

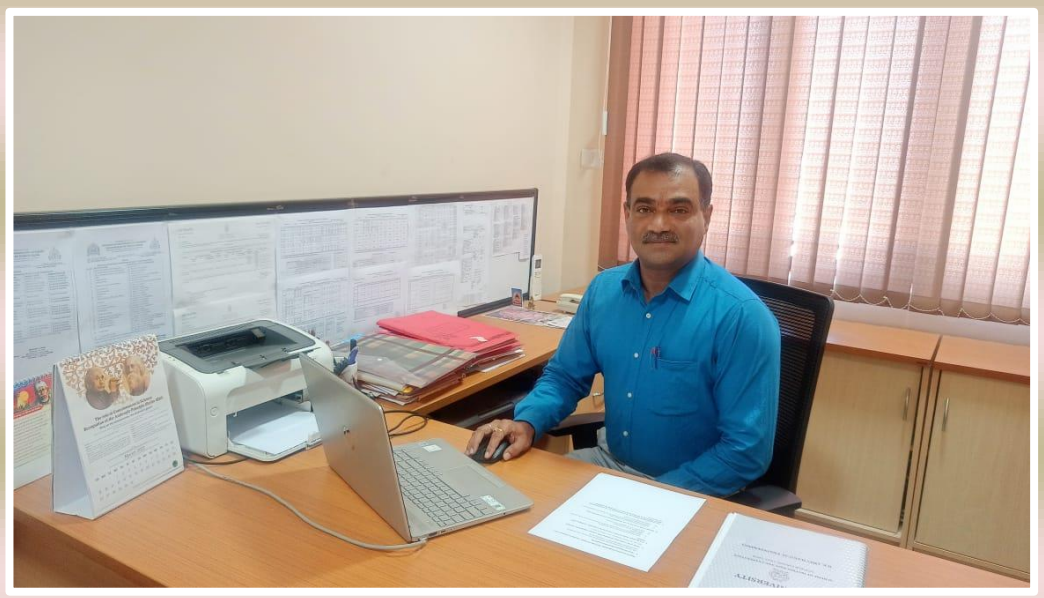
- **Saeesh Verenkar, Raghavendra D. Naik,** "Approximating Amplitude of a Nonlinear Oscillator at Resonance" , *Noise & Vibration Worldwide*, 53 (6), 300-307.

CONFERENCE PAPER PUBLICATION

- **Akhil Naik, Mahesh Dhawalikar, 2022,** "Isolating Stochastic Component of Energy Demand of Pharmaceutical Industry", *International Conference on Emerging Trends in Mechanical and Industrial Engineering*, ICETMIE – 2022- 98, 4-5 March 2022.
- **Amod Desai, Mahesh Dhawalikar,2022,** "Elimination of Stator Machining Bottleneck Activity by Fatigue Reduction and Cycle Time Optimization Through PMTS Approach in a Motor Manufacturing Industry", *International Conference on Advances in Industrial Engineering and Management (ICAIEM)* 2022-12, 18-20 March 2022.

- **Gorakshanath Hanagi, Mahesh Dhawalikar, 2022,** 'Hybrid Ergonomic Approach for Addressing Musculoskeletal Disorders", *International Conference on Advances in Industrial Engineering and Management (ICAIEM)* 2022-48, 18-20 March 2022.
- **Ekansh Tari, Mahesh Dhawalikar, 2022**, "*Line Balancing In a Telecommunication Firm Using Simulation Optimization", International Conference on Advances in Industrial Engineering and Management (ICAIEM)* 2022-51, 18-20 March 2022.
- **Sirajuddin Mulla, Mahesh Dhawalikar, 2022,** "Reduction of PCB Scrap in Base Station Antenna (BSA) Manufacturing Industry by Using FMEA Technique in Six Sigma approach" , *International Conference on Advances in Industrial Engineering and Management (ICAIEM)* 2022-56, 18-20 March 2022.
- **Dwarkanath Aiwale and Milind Sakhardande,** "Complex Proportional Assessment Approach for Locating a Hazardous Facility: A Case Study", *1st ICMEMS* 2022, The DQM Research Centre, Serbia, 24-26 June 2022(online)
- **Kaushik Phal Desai and Milind Sakhardande,** "Reliability Centered Maintenance Approach for Induction Motors in Conveyor System", *1st ICMEMS* 2022, The DQM Research Centre, Serbia,24-26 June 2022 (online)
- H**arichandra Chandekar, Vikas Chaudhari, and Sachin Waigaonka**r,"Theoretical models for Stiffness Prediction of Short Fibre Composites", *Materials Today: Proceedings*, In Press, (Published online: 19 February 2022). International Conference on Advances in Industrial Engineering and Management (ICAIEM) 2022-56, 18-20th March 2022.
- **Maheshkumar Naik, Shridhar Mhalsekar, "**Line Balancing In a Telecommunication Firm Using Simulation Optimization"*International Conference on Advances in Industrial Engineering and Management (ICAIEM)* 2022-51, 18-20th March 2022.

DR. SURAJ SURENDRA RANE TAKES CHARGE OF HEAD OF MECHANICAL ENGINEERING DEPARTMENT



Dr. Suraj Surendra Rane, Professor in Mechanical Engineering took charge as Head of Mechanical Engineering Department at Goa College of Engineering on 6th January 2022. He has a total of more than 23 years of teaching experience and 1 year of industrial experience. He has completed his BE (Mechanical Engineering) and ME (Industrial Engineering) from Goa College of Engineering which is affiliated to Goa University and PhD in Reliability Engineering from Indian Institute of Technology (IIT) Bombay. He started his career at Top Brass Manufacturing Co. Pvt. Ltd. (Currently Godrej and Boyce Mfg. Co. Ltd.) Thivim. He started his teaching career on regular basis at Padre Conceicao College of Engineering (PCCE), Verna. During his 16 years stint at PCCE he rose from Lecturer to become Associate Professor. He was instrumental in infrastructure development at PCCE which consisted of liasoning with internal and external agencies for construction new building of PCCE, in addition to developing major laboratories of Mechanical Engineering Department. He was co-editor of National Conference on Emerging Trends in Mechanical Engineering (NC 2004) organized by Mechanical Engineering Department of PCCE. He also completed the project of Agnel Charities' Agnel Institute of Food Crafts and Culinary Sciences (AIFCCS) which is recognized by Government of Goa and approved by AICTE, New Delhi wherein he was involved in activities like recruitment of faculty, developing laboratories, liasioning with various government agencies in building the infrastructure of the institute, etc. He was

Co-Principal Investigator of schemes for Skill Development of Science and Society Division, Department of Science and Technology, Government of India with project cost of around Rs. 75 lakhs. He joined Goa College of Engineering as Professor in Mechanical Engineering in the year 2014. He was the Chairman Board of Studies in BE (Mechanical Engineering) and ME (Industrial Engineering) of Goa University. He was the Chairman of Indian Institution of Industrial Engineering (IIIE) - Goa Chapter (2016-19). He is the recipient of "Chairman Special Award 2017" by IIIE for continuous innovative development of Industrial Engineering in its operations and significant encouragement to the industries in India. He was awarded Early Career Research Award 2018 in appreciation and recognition of his work in the area of Reliability Modeling, by Association of Inventory Academicians and Practitioners, New Delhi, India. He is the Institute Coordinator for Ministry of Education, Government of India Scheme-Rashtriya Uchchatar Shiksha Abhiyan (RUSA) with sanctioned amount of Rs. 2 Crores. He is Goa University recognized PhD supervisor in Mechanical Engineering at GEC research center. He has co-supervised one PhD under Visvesvaraya Technological University and currently guiding one research scholar under Goa University. He is member of various professional bodies. He is Associate Editor of Springer Journal- International Journal of System Assurance Engineering and Management. He is on the reviewer panel of various international journals. He has published many research articles in international journals and conference proceedings. He was a member of Technical Advisory Committee of Goa State Pollution Control Board.

FACULTY VISIT TO INSITUTE OF MARITIME STUDIES, VASCO

Faculty of Mechanical Engineering Department visited Insitute of Maritime Studies (IMS), Vasco, on the occasion of 25years celebration year of IMS. They were briefed by Mr. Ajay Tambvekar, Deputy Director IMS, on the role played by IMS in Marine sector in the country. He was joined by Mr. Heston Dias, Lecturer, IMS. A tour was arranged during this visit within the IMS facility to showcase different laboratories and virtual systems.

FIELD VISIT F.E. MECHANICAL

A field visit to MRF-Usgao was organised for students of First Year Mechanical Engineering on 25th March, 2022. 64 students attended this field visit.

The visit was nicely planned and guided by Mr. Dinesh Virgincar, an Alumni of Mechanical Engineering Department of Goa College of Engineering and Sr. Manager Production at MRF. The students were shown the entire process of manufacturing of tyre, with the material handling and the quality aspects of the product. This was a very good opportunity for the first year students to see a mix of conventional machines combined with the latest equipment used in the process of tyre manufacturing. Dr. Mahesh Dhawalikar was the faculty coordinator for the field visit and Prof. Balkrishna Chodankar and Dr. Raghavendra Naik were the other faculty members. At the end of the visit, there was a meeting with the General Manager Mr. Gautam Raj and Mr. Dinesh Virgincar.

Mr. Gautam Raj-General Mnager and Mr. Dinesh Virgincar-Senior Production Manager with Dr. Raghavendra Naik, Prof. Balkrishna Chodankar and Dr. Mahesh Dhawalikar

There were discussions on areas where GEC and MRF could work together and Mr. Gautam Raj showed interest in having an MOU with GEC. He also agreed to take GEC Students for Internship. It was decided that Prof. Balkrishna Chodankar will visit MRF with the draft proposal for the MOU.

FIELD VISIT T.E. MECHANICAL

A field visit to Godrej and Boyce Mfg. Ltd. Madkai, was organised for students of Third Year Mechanical Engineering (SEM VI) on 25th March, 2022. Dr. Mahesh Dhawalikar was the faculty coordinator. The visit was well organised by the H.R. Manager Mr. Mahesh Patil. Mr. Akhil Pallath, an alumini of GEC played an active role in taking the students around. The students were arranged in small batches of 6 to 7 students and guided by experts who showed them the entire manufacturing process for various models of Locks. The students were shown various products and the processes along with the in-house developed low cost automations taken up by the company.

Akhil Pallath and Dr. Mahesh Dhawalikar with the GEC Students

FIELD VISIT B.E. MECHANICAL

Kineco Limited is one of India's leading companies in the composites industry, offering a wide range of products and processing technologies to customers all over the world. Promoted by

first-generation entrepreneur Shekhar Sardessai, Kineco made a modest beginning in 1995 in Goa, India by manufacturing FRP industrial equipment. Today, with over two decades of experience, Kineco's passion for composites, innovation, and technology is recognized as its biggest USP in the market.

Mechanical Engineering Department of Goa College of Engineering recently organized a Field Visit to Kineco Limited, Pilerne Industrial Estates, Goa, for the Final Year students to introduce them to the field of composites and the processes pertaining to the manufacturing of such structures. The field visit was held on 23rd April, 2022. Dr. B. S. Manohar Shankar accompanied the students. Initially, Mr. Sargunamoorthy N. (Manager - Process Engineering) delivered introduction about the company to the students. He informed the students about the presence of 4 units of Kineco Limited in Pilerne Industrial Estates, each unit achieving a different output. Kineco Limited is one of the biggest suppliers of composite structures to the Aerospace and Railway Industry.

Subsequent to the introduction of the company, the students were divided into three groups and were taken along through the different departments to show the type of processes carried out by the company to achieve various parts and structures. One of the structures shown in detail was Radome, which is used in Telecommunication towers to protect the radar antenna. Students saw how the entire manufacturing process of the radome structure is carried out. The use of fiberglass, resin, and roff in preparing the basic structure, setting up of this structure on the pultrusion machine, and the process of cutting down the equal size of the parts using sensor was demonstrated to the students. Students also saw the use of CNC routers in achieving the tasks such as drilling and milling to achieve small features of these parts.

Students were then guided along the shop floor where railway sanitary cabins are manufactured. Processes like Gel Coating and Hand Lamination were demonstrated to the

students. The standard procedure for lamination was shown wherein the gel-coated part is cured and resin is applied in multiple layers. Students were given insight into the fact that the gel coating is done as per the requirement of the customer and the composite structures are manufactured in such a way that the parts are repellant to fire and even if the parts catch fire they do not give out toxic gases. Various sections on the manufacturing line were shown to the students such as Molding, Broaching, Assembly, Tooling, Foam cutting, Trimming, and Finishing. Students were able to observe closely how each of the parts of the washroom cabins to be attached to the railways were manufactured and assembled.

Students definitely observed and learned about a lot of processes. This field visit at Kineco Limited has generated interest amongst a lot of students to take up a career in the field of composites. The valuable knowledge gained by the students during the field visit will surely guide them through their careers in the industry.

STUDENT'S PROJECTS AND INTERNSHIPS

Dr. Mahesh Dhawalikar visited CG Power solutions at Kundai on 25th June, 2022 and met Mr. Vaibhav Velingkar- Sr. Manager and Mr. Amod Desai- Manager from the company. Mr. Amod Desai took Dr. Mahesh Dhawalikar around the plant and showed the work done by the present project students of Dr. Dhawalikar. He expressed happiness about the work done and showed willingness to take more students for project work next year. Mr. Vaibhav Velingkar and Mr. Amod Desai showed keen interest on helping students of GEC through industry projects and internships.

Dr. Mahesh Dhawalikar with Mr. Vaibhav Velingkar and Mr. Amod Desai on 25th June, 2022

Dr. Suraj Rane, Head of Mehanical Engineering department of GEC, Dr. Akshay Nigalye, Professor and Workshop Superintendent and Dr. Mahesh Dhawalikar visited various industries and discussed about the internships for GEC students likely to start from 16th August 2022 for 8 weeks. There was positive response form the industries and all the industries have agreed to take GEC students for internships. Dr. Suraj Rane visited Godrej

and Boyce Mfg. Ltd., Madkai, Goa. They have promised to take 13 GEC students. Dr. Akshay Nigalye visited Astra Metal Systems Verna and RUTUTEK Madkai. Both have agreed to take 5 students each.

Dr. Akshay Nigalye with Mr. Charlton Colaco-CEO, RUTUTEK on 28th February, 2022

Dr. Suraj Rane with Mr. James Kurian, Associate Vice-President, Godrej and Boyce, Madkai on 16th May, 2022

Dr. Mahesh Dhawalikar approached AEROCOACH-Bethoda, Dhavalikar Automobiles and Deccan Chemicals, Corlim. All agreed to take 4 to 5 students each.

Dr. Mahesh Dhawalikar with Mr. Edward Monteiro, Partner AEROCOACH on 21st February, 2022

Dr. Mahesh Dhawalikar with Mr. Amol Dhavalikar, Managing Partner Dhavalikar Automobiles on 18th February, 2022

IIIE FOUNDATION DAY CELEBRATION - GOA CHAPTER

The IIIE Foundation Day was celebrated on 27th January, 2022. On this occasion, IIIE Goa Chapter organized an online webinar on "EVOLUTION OF IE AND ITS ROLE IN THE DEVELOPMENT OF INDUSTRIES". More than 50 participants from various domains like Industry, IIIE members, faculty, and students participated in the celebration. The session was delivered by Dr. Milind Sakhardande and Dr. Mahesh Caisucar.

Dr. Milind Sakhardande is presently working as an Associate Professor in the Department of Mechanical Engineering, Goa College of Engineering, Goa since 1993. He completed his B.E. (Mechanical Engineering), M.E. (Industrial Engineering) from Goa University, M. Tech. (Reliability Engineering) from IIT Bombay and PhD (Mechanical Engineering) from Goa University. He has 28 years of teaching experience at the UG and PG level. He has published over 40 research papers in various International Conferences and Journals. He is the Founder Secretary of the IIIE (Indian Institution of Industrial Engineering), Goa Chapter and presently Vice Chairman of the IIIE Goa Chapter.

Prof. Mahesh Caisucar is presently working as an Associate Professor in the Department of Mechanical Engineering at Goa College of Engineering, Farmagudi, Goa. He is also a research scholar for PhD at Goa University under the guidance of Dr. Rajesh Prabhu Gaonkar. He is B.E. (Mechanical Engineering), M.E. (Industrial Engineering). He has 7 years of Industrial experience and 16 years of teaching experience. He has published over 20 research papers in various International Conferences and Journals.

The programme started with the IIIE song followed by the National Anthem. Dr Anant Naik,Vice Chairman, IIIE, Goa Chapter welcomed and briefed about the IIIE. Dr Vivek Kamat, Director of Technical Education and President of the IIIE-Goa Chapter, shared his words of

wisdom and appreciated the IIIE role in the industry. Dr Raghvendra Naik, member, IIIE Goa Chapter, introduced the speakers.

Dr. Milind Sakhardande and Prof. Mahesh Caisucar enlightened the participants about "Evolution of IE And its Role in the Development of Industries". Dr Milind explained how large and small scale industries take decisions on supply chain which is very much important for industry growth. He also shed light on different Multi Criteria Decision making methods. Also, he explained in details with example about supplier selection by Analytical Hierarchial Process (AHP) method. Dr. Mahesh Caisucar explained Technique of Order Preference by Similarity to Ideal Solution (TOPSIS) and COPRAS in detail with examples and steps.

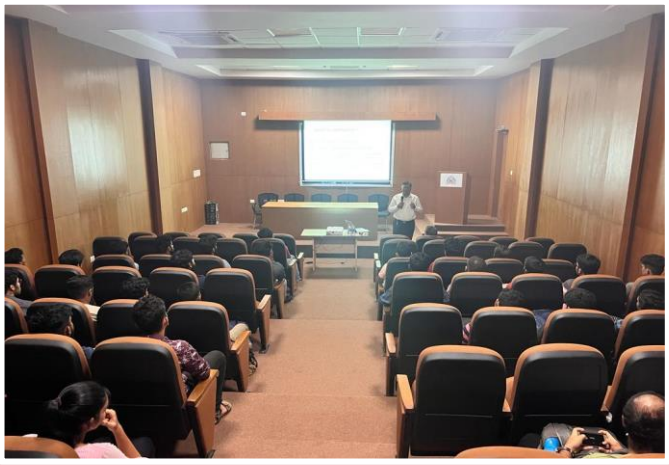
The session ended with a Q &A session, giving the participants an understanding of AHP and TOPSIS supplier selection method. Lt. Anand Naik, Co-Opted Member -IIIE Goa Chapter, proposed the vote of thanks. The programme was attended mainly by the members of IIIE Goa Chapter, representatives from industry and selected professionals from outside the state of Goa with special presence of National council members of IIIE Dr Rajesh Prabhu Gaonkar (Goa) and Mr. Yogesh Dipnaik (National Headquarter).

Dr. Milind Sakhardande

Prof. Mahesh Caisucar

SEMINAR ON ETHICS AND MOTIVATION

A seminar was held for the students of second year of the mechanical department on 9th June, 2022 on the topic of “Ethics and Motivation”. The seminar was held by the Mechanical Engineering Students’ Association. The speaker for the seminar was Mr. Vishwanath G. Joshi. The seminar commenced with an introduction to the speaker Prof. Vishwanath G. Joshi's work and specialities. Then the stage was handed over to Mr Vishwanath. He gave an introduction about what happiness and pleasure is and what was the main difference between them along with its importance to all engineers. Then he explained about various statements in the Bhagawad Gita related to happiness and pleasure. The speaker explained the importance of knowledge and behavior and how lacking in one can be dangerous. Question and answer session was held at the end. The seminar finally ended with a vote of thanks and a token of appreciation was given to Prof. Vishwanath G. Joshi by Dr. Mahesh Dhavlikar.



Prof. Vishwanath G. Joshidelivering talk on the topic of “Ethics and Motivation”

Dr. Mahesh Dhawliker presenting memento Prof. Vishwanath Joshi

ROBOTICS WORKSHOP – MESSERGI

A robotics seminar and demonstration was organized on 9th April, 2022 by the Mechanical Engineering Students Association (MESA) of Goa College of Engineering (GEC) under the leadership of MESSERGI Advisor Mr. Sanved Diukar at Government High School Nadora, Revora, Goa. Students from 5th to 9th standard participated in this event. The purpose of this program was to give the students basic understanding about field of robotics and automation. The workshop comprised of giving the participating students an idea about robots, robotics, types of robots and their applications, career in robotics, live demonstration of a soccer robot, doubt clarification session and conclusion. The resource persons for this event were Mr. Pranal Naik, Mr. Pratik Raut and Mr. Saish Haldankar of the Mechanical Engineering Department.

The students were introduced to the world of robotics, how robots have evolved over the years and the use of robots in our daily life. Participants were educated about the different types of robots and their applications in industry and hazardous environments. They were given a brief understanding about smart devices, about microcontrollers such as Arduino, which is used to control smart devices and about the use of coding in robotics. Current developments in the fields of robotics such as the use of Artificial Intelligence and machine learning and the development of autonomous robots were explained. A couple of robots were kept on display for the students along with the various components such as motors, gears, batteries, signal transmitters, etc. Each component on display was explained along with its application. The robots and the parts were circulated among the students to have a close-up look and identify them. In the meantime, students were free to ask their doubts, which were adequately satisfied by the presenters. This was followed by a live demonstration of the soccer robot before the students.

The students were thrilled by the demonstration. Students, as well as faculty members were given an opportunity to operate the robot under the guidance of the experts.

A small ceremony was held to give the vote of thanks wherein the Headmaster of the school, Shri. Sanjay Diukar congratulated the team for taking the initiative and organizing this workshop. He also encouraged the school students to take inspiration from the event and pursue their interest in robotics and allied fields.

AutoCAD WORKSHOP

AutoCAD is a computer-aided design software developed by the company Autodesk (hence the name AutoCAD). It allows you to draw and edit digital 2D and 3D designs more quickly and easily than you could by hand. The files can also be easily saved and stored in the cloud, so they be accessed anywhere at any time. AutoCAD is used by architects, engineers, interior designers, real estate developers, artists, and the list goes on and on. Over the years AutoCAD has built a substantial army of users and with over 20 different pieces of software being offered in its suite. Mechanical engineers use AutoCAD for sketching and analysing ideas to determine the best solution for a problem at the early stages of a design project. AutoCAD eliminates the need for drawing new blueprints for every version of an idea. It also helps in interpreting designs, locating flaws, and any inconsistencies.

Mechanical Engineering Students' Association organized an online workshop on AutoCAD on 8th January,2022 for the students of Goa College of Engineering. The one-day workshop began with an introduction of the speaker, Mr. Archit Borkar. All the students were asked to install the AutoCAD software prior to the workshop since the workshop was completely hands on and many resources and practice drawings were also provided to the students. The workshop comprised of two sessions. During the morning session the speaker taught various commands and features of AutoCAD to the students. A lot of practice sessions were also conducted so that the students could practice their understanding of the commands. Various basic commands like Lines, Circles, Ellipse, Polygons, Trim and Extend, and Fillet and Chamfer were covered. Some advance features like Hatching, Gradient, Layers, Dimensions and annotations, Blocks and Tables were also covered. An introduction to 3D design was also given to the students by discussing basic commands such as extrude, revolve and sweep.

During the afternoon session the students were given a task of completing an assembly or dis-assembly drawing. The students were allowed to ask their doubts and queries to the speaker while they worked on the assignment. Students could complete the assignment flawlessly and many were also able to present their drawing to receive feedback from the speaker. The workshop was a great success and the knowledge gained by the students will largely benefit them in industry and academics.

ISHRAE GEC STUDENTS CHAPTER

Seminar was held in the auditorium hall in the Mechanical Department on 27th May 2022. It started at 2:30 pm in the afternoon. The chief guest for the seminar was Mr. Dilip Sahakari and Student Activities head, Mr. Mohnish Borker was also present. It was an honour to have Mr. Dilip as a guest apeaker who has an amazing industrial experience and career. He has worked for more than 40 years in Power Plant projects, Sub-stations, Barge, Ships and Ammonia Plant etc. He has organised several training sessions on electrical safety, power savings, cashless transactions etc. He has also been ex-committee member of Institution of Engineers. He talked about the imortance of safety when it comes to electrical components

and appliances. He played a question and answer round also where he awarded prizes to students giving the correct answers. He talked about solar energy power generation and how it will benefit students. He also talked about different potential reasons for getting a shock and different ways to prevent oneself from getting one. He cleared some concepts about earthing, grounding, neutral, padding and also on current flow and the role it plays in electrical supply and appliances.

SEMINAR ON VIBRATION ANALYSIS

The Chief Guest for the seminar was Mr. Suryakant Gawde. He has lot of experience in vibration systems and has done extensive research in vibrational analysis and related aeas. The seminar started at 2:00 pm in the auditorium hall. The speaker explained about the meaning of vibration, types of vibration, degrees of freedom, time period of vibration and natural frequency. The effects of vibration on machine system was also taken up along with the different vibrational signatures that can be observed in any equipment. The physical significance of these signatures which arises because of different parameters like radial misalignment, axial misalignment, improper fit or due to failure of any machining element, was explained. A practical demo was given in the laboratory on a compressor unit. A device was kept on the compressor unit with Fast Fourier Transform (FFT) model in it which could analyse vibrations and showed the graphical represntations. The device plotted amplitude, frequency and signal modulation graphs.

PROF. UDAY AMONKAR MEMORIAL LECTURE

The Goa Chapter of the Indian Institution of Industrial Engineering (IIIE) organised Prof. Uday Amonkar Memorial Lecture on "IMPACTS OF ENERGY, WATER AND ENVIRONMENT ON MATERIALS DEVELOPMENT" on 3rd May, 2022 in the auditorium of IT Department of Goa College of Engineering, Farmagudi. The lecture was delivered by eminent academician and top researcher Prof. B. K.Mishra, Director, Indian Institute of Technology Goa (IIT Goa).

Prof. Uday Amonkar Memorial Lecture is organised by IIIE Goa Chapter every year on 3rd May which is the Foundation Day of IIIE Goa Chapter. The day marks the birth anniversary of the beloved Prof. Amonkar, who has immensely contributed to the field of Industrial Engineering. The programme started with the National Anthem and the IIIE song was played during lighting of the lamp. Dr. Raghavendra Naik, Member of the Executive Council, IIIE Goa Chapter compered the entire programme. A short video on the life of Prof. Uday Amonkar and his contribution to Industrial Engineering was screened on this occasion. Dr. R. B. Lohani, Principal of Goa College of Engineering welcomed the gathering. Dr. Vivek Kamat, Director of Technical Education, Goa State, also the President of IIIE Goa Chapter and a close associate of Prof. Uday Amonkar shared his memories about Prof. Amonkar. Prof. Goliwadekar, a close associate of Prof. Uday Amonkar retired after superannuation from Mechanical Enginering Department of Goa College of Engineering, Farmagudi after serving for over three decades. He shared the memories of his association with Prof. Uday Amonkar. This communication was shared via a video screening.

Dr. Vivek Kamat, Dr. Rajesh Lohani, Dr. Rajesh S. Prabhu Gaonkar, National Council Member of IIIE and members of IIIE Goa Chapter were present to grace the occasion. Lt. Anand Naik, Executive Council Member, IIIE Goa Chapter, proposed the vote of thanks.

Prof. B. K. Mishra, Director IIT Goa, offering the flowers

Prof. B. K. Mishra, Director IIT Goa, delivering the Memorial Lecture

STAFF FELICITATION

Dr. Suraj Rane, Dr. Milind Sakhardande, Prof Mahesh Caisucar, Dr. Hari Chandekar and Lt. Anand Naik were felicitated at the hands of Dr. Anil D. Saharabudhe, AICTE Chairman in the distinguish presence of Shri Sudin Dhavalikar, Honorable Minister of Power, Housing, New and Renewable Energy, Dr. Vivek Kamat, Director, Directorate of Technical Education and Dr. R. B. Lohani, Principal Goa College of Engineering.

TORQUE - 2022

With an objective to provide a platform for students to showcase their innovative ideas and products to life, Mechanical Engineering Students' Association (MESA) organized 'The Stark Lab' (Project Idea Expo) as one of the events during Torque 2022. The event was held on Saturday, 11th June, 2022 in the Mechanical Engineering Department, Goa College of Engineering, where a result of good hard work done by the Students was displayed. The event was conducted in two categories, UG and HSSC levels. Many students showed their interest in exhibiting their project ideas. Out of 4 participants who had registered, 3 participants participated in the UG level category.

The students fully coordinated the event. The function generated a high degree of excitement in the students and faculty of the college, and was a great success. The students were motivated by giving prizes to the best 2 projects in the competition.

UG level projects:-

2D modular plotter by Bens S. Abraham

Pole Climbing Robot by Ratnesh Aroskar, Saish Haldankar, Ravindra Chari, Atish Mandrekar

HSSC level project:

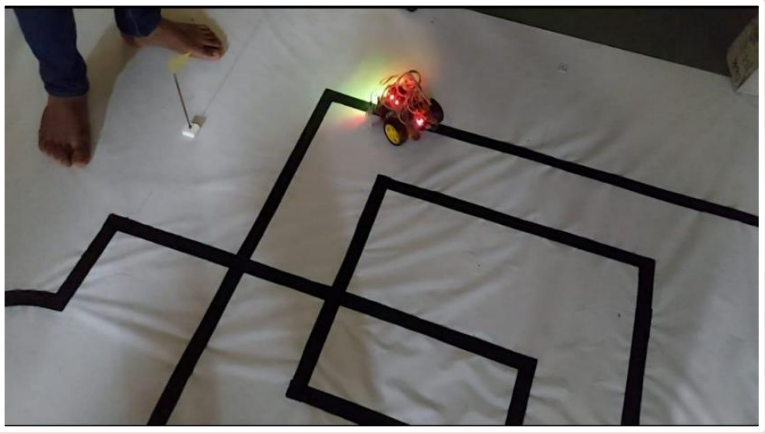
Rainwater harvesting solar house and irrigation working Model by S.S.S Samiti's S.A.M.D.H H.S.S. of Science, Ponda.

The event was judged by professors Dr. B. S. Manohar Shankar and Dr. Raghavendra Dutta Naik. The event was a great success and was conducted successfully.

Event Name- SACRED TIMELINE (Line Follower)

Coordinator- Shreyash Vaigankar

As the name suggests, here a robot made by the participants needs to follow a specified path, and the one which covers the full path in the least amount of time wins the event.



Event Name- PLANET HULK (Robo Sumo)
Coordinators- Omkar Ajgaonkar and Ismail Khan

In the RoboSumo competition, two bots compete in head-to-head matches. The RoboSumo matches are played out like traditional human sumo matches. In this event, no usage of weapons is allowed and the bots are not allowed to flip over the opponent bot due to the competition being that of 'pushing' and the opponent must be pushed out of the borderline. The teams win points every time they push the opponent bot out, and the matches go on until the timer runs out.

Event Name- KARUN PATEL'S CAMERA (Videography)
Coordinators- Saish Naik and Gaurij Gauthankar

The videography event of TORQUE'22 allowed the participants to explore themselves and get introduced to their creative side. The theme of the competition was "Automobile Advertisement" which synced well with the technical background of the event. The task in front of the participants was to create an advertisement having a duration of 10-60 seconds.

The participants had to shoot the video in 16:4 ratio, MP4 format, and 1080p full HD quality and had to submit the final video along with the raw clips via email

Event Name- KARUN PATEL'S CAMERA (Videography)
Coordinators- Saish Naik and Gaurij Gauthankar

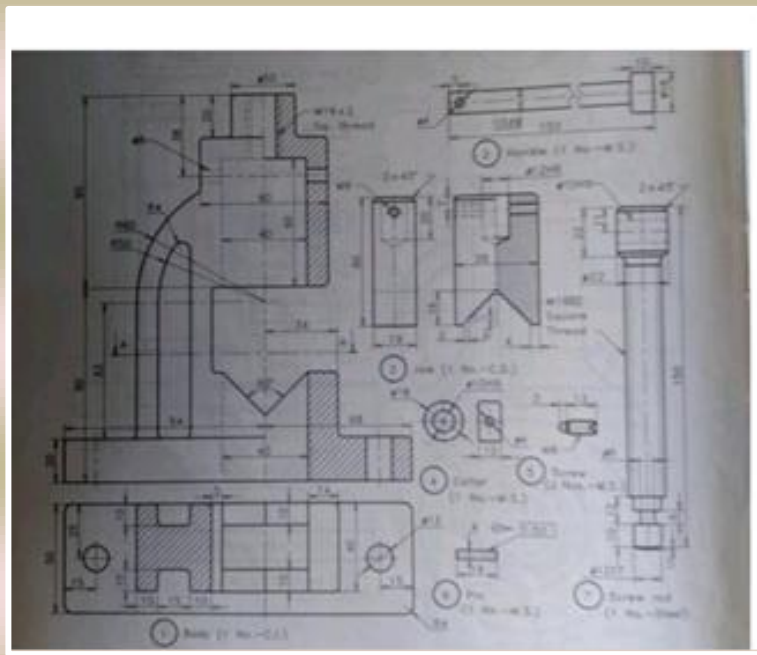
The Photography event of TORQUE'22 all owed the participants to explore themselves and get introduced to their creative side. The theme of the competition was "Streets Of GEC" .The coordinators of the event were Saish Naik and Gaurij Gauthankar. The task in front of the participants was to click a picture of "Streets in GEC". The participants had to submit the final photo via email.

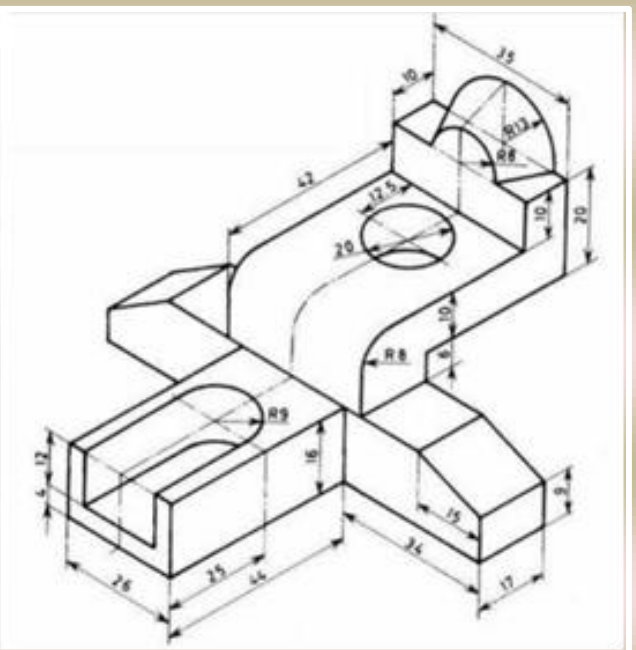
Event Name- CYBORG KICKOFF (Robo Soccer)
Coordinators- Saish Naik and Gaurij Gauthankar

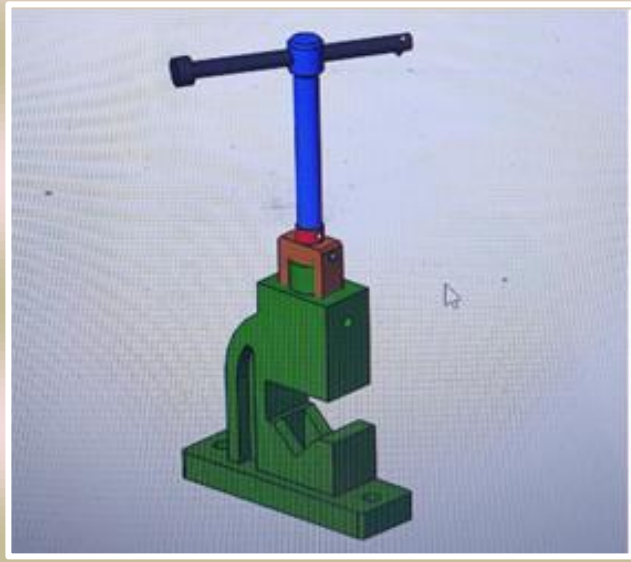
ROBO SOCCER Competition was organized for TORQUE'22 event by MESA Council, Goa College of Engineering, on 11th of June, 2022. In this competition, participants had to battle it out and prove their endurance and skills in a nail-biting game of football, using what they had created from the scratch. Each game for a duration of 2 minutes: 30 seconds, and players had the option of taking a technical time out.

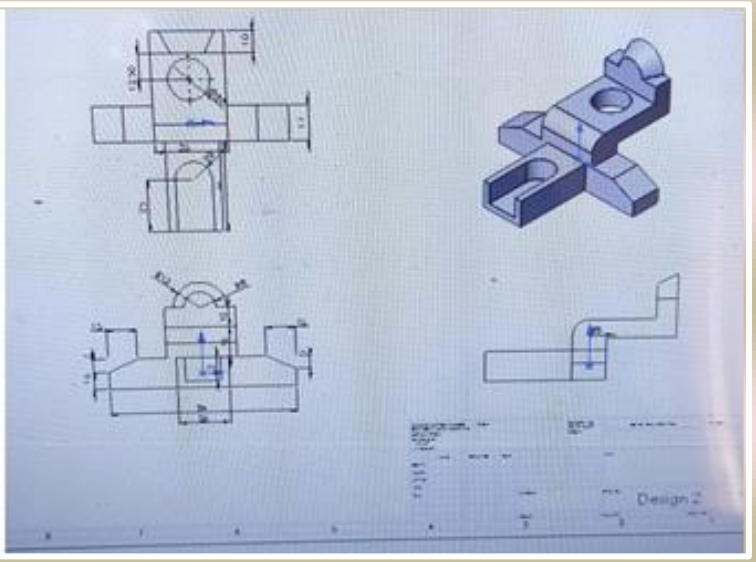
Event Name- The Nidavellir Forge (CADathon)
Coordinators- Sohan Naik and Sakshi Shet

CADathon or CAD modeling competition aims at challenging participants in completing a CAD task within the allowed time limit. There were 7 participants. Participants used their own laptops to work on the problem statement using following software like Solidworks, Fusion 360 or Inventor.









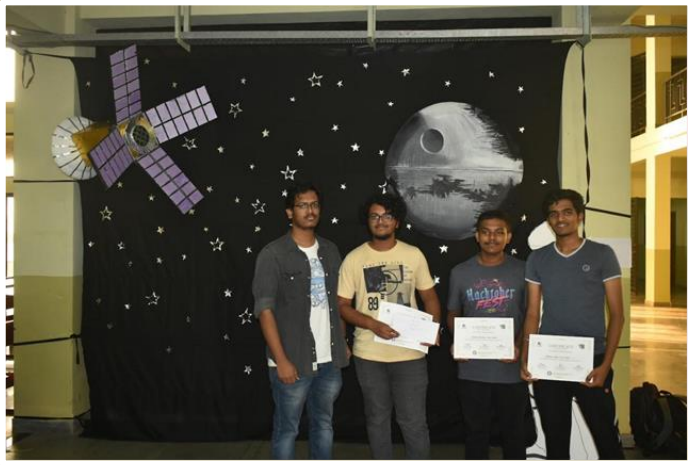
Event Name- E Sports
Coordinator- Rudran Mandurkar, Omkar Ajgaonkar

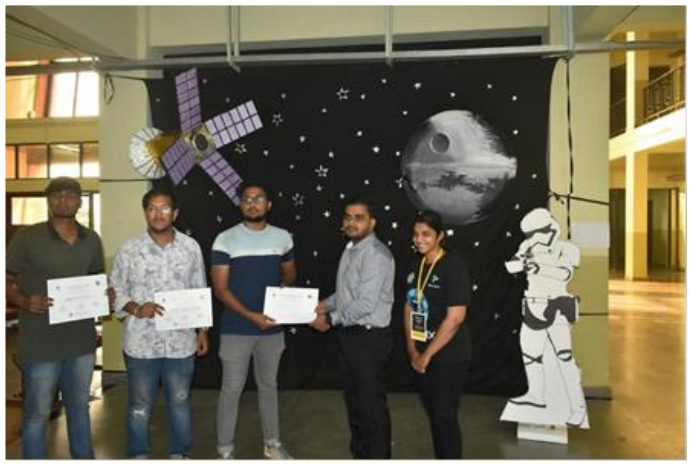
Esports is a booming global industry where skilled video gamers play competitively. In the same way that traditional sports have competitions in baseball, basketball and football, Esports encompasses competitions across a variety of video games. Esports, short for "electronic sports," transforms online gaming into a spectator sport. The experience is similar to watching a professional sporting event, except that instead of watching a physical event, spectators watch video gamers compete against each other in a virtual environment. Counter Strike: Global Offensive is one of the most prominent E-sports games with a world-wide audience. Teams of 5 must battle it out against one another to prove that they are superior in skill, teamwork and game Mechanics.

Event Name- Technothon (Hackathon)
Coordinator- Rudraksh R. Kanekar

MESA organized a 24 hour Hackathon in association with CURSOR as a joint technical event for Torque X Technix on 27th May 2022. The Coordinators for the event were Rudraksh R. Kanekar and Deepraj Bhosale. 8 teams participated from colleges across the state, comprising undergraduates and postgraduates. The problem statements consisted of real life issues and enhancements such as in the medical or farming sector. The Hackathon commenced at sharp 12:00 noon and coding ended at sharp 12:00 noon the next day.The

winners were Team Delta with their innovative approach towards accurate health estimate for Health Insurance using ML and AI.





Event Name- Flashed (Robo Race)
Coordinator- Pranal Naik

The Mechanical Engineering Students' Association had organised a RoboRace competition Team Rangers, Team BlackMamba, Team Epsilon and Team Flash were some of the participants. Each team had to complete the race course in a minimum of time. Two trials were given to each team. The best one among them was considered. There were penalties for crossing the track line and skipping the obstacles. A penalty of 5 seconds was added to their run time if they crossed the track line and a penalty of 30 seconds was added if they skipped the obstacles.

Event Name- Book of Vishanti (Quiz)
Coordinator- Rudraksh R. Kanekar

MESA organized a quiz competition with the theme FinTech, which comprises all the things involving finance and technology. The Quizmaster for the day was Mr. Rudraksh R. Kanekar. The quiz consisted of an off-stage selection round to select the best 6 teams to go on stage, and then 4 rounds on stage which glanced over a vast area in the FinTech field. All the rounds were keenly contested. It was heart-warming to see the students brimming with enthusiasm and exuberance as they vied with each other to answer questions that required deep knowledge.

COMMUNITY SERVICE

As a part of commemoration of 75 years of India's Independence, faculty of Mechanical Engineering Department performed community service activity during Annual Magh Zatra at Shri Shantadurga Devasthan, Kavale, Goa, as Volunteer on 05/02/2022. They spent nearly 12 hours helping the temple management in managing activities related to the Anuual zatra. Faculty were guided by Shri. Triloknath Borkar, President, Shri Shantadurga Devasthan Committee, Kavale Goa. The following faculty members were present and were actively involved in the community service:

1. Dr. Suraj Rane
2. Dr. Akshay Nigalye
3. Dr. Jagannath Hirkude
4. Dr. Mahesh Dhawalikar
5. Dr. Milind Sakhardande
6. Dr. B. S. Manohar Shankar
7. Prof. Vivek Belokar
8. Prof. Hari Chandekar
9. Prof. Mallikarjun Gurav
10. Prof. Basavraj Olekar

The visit and the activity was coordinated by Dr. Milind Sakhardande.

22nd CEOS CONFERENCE

Dr. Rajesj Prabhu Gaonkar, Dr Raghavendra Naik and Lt. Anand Naik attended the 22nd CEOS conference from 6th May to 8th May at The Leela, Cavellosim, Goa. The event wsas organised by IIIE.

VISIT OF ANO LT. ANAND NAIK TO RAJBHAVAN

Lt. Anand Naik Associate NCC Officer GEC (Mechanical Dept) along with Principal Dr. R B Lohani visited Rajbhavan on 4th May May 2022. They were accompanied Commanding officer MKS Rathore, SUO

Krutharth Mahale, SUO Riya Raut Dessai and Cadet Harsh Teli (Mechanical Department) who represented at RDC 22 at directorate level.

ORIENTATION SCHEDULE FOR F.E. STUDENTS (2022)

Day/Date	9:30--11:00am	11:30-1:00pm
Monday: 21/03/22	Welcome by HOD	Self-Health Monitoring in Present Times Dr. Nutan Dev
Tuesday: 22/03/22	Counselling and Stress Management Ms. Mukta Dhavalikar	National Education Policy (NEP) Dr V.N.Shet
Wednesday: 23/03/22	Interaction with GEC Alumi Mr. Sumukh Kamat	Art of Living for youth by Ms. Mithili Kakodkar
Thursday: 24/03/22	Motivation Dr. Narayan Desai	Training and Placement Prof. Teslin Jacob & Dr. Milind Sakhardande
Friday: 25/03/22	Industrial visit	

B.E. (MECH) PROJECTS: ACADEMIC YEAR: 2021-22

Sr.No	Name of the Project	Name of the Project Guide	Name of the students
1	Design and fabrication of portable spot welding machine	Dr. Shridhar Mhalsekar	Adit Naik Kavalekar
			Niket Shetkar
			Prasad Gaude
			Shubham Verekar
2	Implementing Lean Concept on Assembly Line	Prof. Mahesh Caisucar	Sanath Prabhu
			Ishan Ramnathkar
			Vipul Gawas
			Chetan Gaude
3	Improvement of Maintenance Policies Using Six Sigma Methodology	Dr. Mahesh Dhavlikar	Shriyash Gaunker
			Blasio Gonsalves
			Gangaram Dessai
			Deon Fernandes

4	Design and fabrication of treadmill bicycle	Dr. Manohar Shankar B. S	Shaun Sutari Manthan Vengurlekar Adarsh Ashok Gaonkar Sanved Diukar
5	Portable CNC Electrical Discharge Machining Setup	Dr. Raghvendra.D.Naik	Pratik.M.Raut Ramchandrarao.D.Rane Mandar.M.Kerkar
6	Energy Management and Audit - A Net Zero Approach towards Sustainability	Dr. Jagannath Hirkude	Aldrige Luis, Utkarsh Shirodkar Jolan Pereira Gomes Shreeyash Tari
7	Inventory Management at CG Power	Dr. Mahesh Dhavlikar	Suraj Gawade Saish R Naik Deepraj Naik Jatin Gaude
8	Design and Fabrication Of Vine Robot	Dr. B. S. Manohar Shankar	Archit Borkar Shubham Bene Rohit Narulkar Mahesha Gonal
9	Design of FDM (Fused Deposition Modelling) 3-D Printer	Dr. Raghavendra Datta Naik	Navjyot Sanjay Lambor Ankit Naik Ghoshank Mandrekar Eshant Kunkalkar
10	Unmanned Pesticide sprayer for coconut tree	Dr. Mahesh Caisucar	Vishwesh Bandekar Digjay Gaude Sidhdesh Sawant Nidesh Mahalunkar
11	Design and Fabrication of Fully Automated Packaging System	Dr. Mahesh Caisucar	Ankita Tiwari Saket Athalye Kaushik Bhattacharjee Vaibhav Raghuveer Kamat
12	Energy Harvasting	Prof. B.R. Kulkarni	Dattaraj Mandrekar Yasin Shaikh Dheeraj Shirodkar

			Suraj Velip
			Vikas Upadhyay
13	Design and fabrication of mechanically driven efficient cow dung collecting system	Dr. Suraj Rane	Poonit Kerkar
			Deepak Bhanushali
			Cydroy Dias
			Rudraksh Kanekar
14	Study and analysis of manufacturing process and products for purpose of recycling of waste towards energy conservation	Prof. Vivek Belokar	Harshkumar Mukeshbhai Patel
			Hitikkumar Rajeshbhai Patel
			Varun Singh
			Sahil Velip
15	Study of process of solid waste treatment plant generating electric energy to propose improvements in disposal of flue gas	Prof. Vivek Belokar	Aakash Chalwadi
			Joebel Dsouza
			Pritesh Mann
			Vishal Kurmi
16	Design and fabrication of compact portable folding bicycle	Dr. Akshay Nigalye	Shivam Raikar
			Rudran Mandurkar
			Saish Surendra Naik
			Sangam Shikerkar
17	Design ofPole Climbing Robotic Mechanism	Dr. Hari Chandekar	Ratnesh Aroskar
			Ravindra Chari
			Saish Haldankar
			Atish Mandrekar
			Bernard Gomes
18	Harnessing and Utilization of Solar Energy	Dr. Jagannath Hirkude	Yuvraj Sawant
			Ugam Sawant
			Saheel Halarnekar
			Vaibhav Kambli
19	Performance Analysis of C.I Engine with biodiesel from used oil	Prof. B R Kulkarni	Wilfer Cardozo
			Jonathan Gomes
			Gaurav Gaude
			Ketan Gaonkar
			Aniket Bhatta

20	Power Generating Speed Breaker	Dr. Milind Sakhardande	Pratik Naik Vighnesh Manerikar Moinudeen sahad M R Simray Singh Niranjan

MARCH 2022 INTERNSHIP

SN	NAME	ROLL NO	COMPANY	START	END	DURATION
1	Abhishek uday chari	191102001	Automobile cooperation of Goa Limited--ACGL	09-03-2022	19-03-2022	10 days
2	Ramachandra Ramakant gawde	191102051	Automobile cooperation of Goa Limited--ACGL	09-03-2022	19-03-2022	10 days
3	Vedant naik jalmi	191102088	Automobile cooperation of Goa Limited--ACGL	09-03-2022	19-03-2022	10 days
4	Sanmesh Sanjay shetge	191102060	Automobile cooperation of Goa Limited--ACGL	09-03-2022	19-03-2022	10 days
5	Vasudev Vaze	191102076	Automobile cooperation of Goa Limited--ACGL	09-03-2022	19-03-2022	10 days
6	T. Athul	191102070	Sumruna Engineering Services	06-01-2022	08-03-2022	30 days

INSTITUTE VISION

TECHNICAL INSTITUTE WITH A FOCUS ON EXCELLENCE IN ACADEMICS, RESEARCH, INDUSTRY COLLABORATION AND NURTURING HUMAN VALUES IN STUDENTS

INSTITUTE MISSION

- FORMULATE & IMPLEMENT CURRICULUM THAT ENSURES HIGH ACADEMIC STANDARDS
- PROVIDE INFRASTRUCTURE THAT MEETS ACADEMIC AND ADVANCED RESEARCH REQUIREMENTS.
- COLLABORATE WITH NATIONAL, INTERNATIONAL INSTITUTIONS, LABORATORIES AND INDUSTRIES THROUGH STUDENT AND FACULTY EXCHANGE PROGRAMS AND INTERNSHIPS.
- UNDERTAKE CONSULTANCY PROJECTS THAT ARE RELEVANT TO THE STATE & NATION.
- IMPART HUMAN VALUES, AWARENESS OF ENVIRONMENT AND SUSTAINABLE SOLUTIONS IN STUDENTS AND FACULTY.
- NURTURE INNOVATION, ENTREPRENEURSHIP, LEADERSHIP AND RESOURCE MANAGEMENT SKILLS

DEPARTMENT VISION

IMPART HIGH QUALITY KNOWLEDGE & SKILLS TO STUDENTS IN THE FIELD OF MECHANICAL ENGINEERING, ENCOURAGE RESEARCH, INDUSTRY BASED PROJECTS LEADING TO CONSULTANCY & NURTURE HUMAN VALUES AND LIFE SKILLS

DEPARTMENT MISSION

M1: IMPART KNOWLEDGE AND SKILL BASED TRAINING IN MECHANICAL ENGINEERING AND ALLIED FIELDS

M2: PROMOTE RESEARCH AND INDUSTRY BASED PROJECTS

M3: INCULCATE LEADERSHIP QUALITIES, HUMAN VALUES, CONCERN FOR ENVIRONMENT AND SOCIETY

M4: NURTURE INNOVATION, ENTREPRENEURSHIP AND RESOURCE MANAGEMENT SKILLS

PROGRAM EDUCATIONAL OBJECTIVES

PEO 1 IMPART KNOWLEDGE, PROBLEM SOLVING SKILLS, USAGE OF MODERN TOOLS RELATED TO MECHANICAL ENGINEERING AND ALLIED FIELDS

PEO 2 ENCOURAGE TEAM WORK AMONG STUDENTS IN SOLVING COMPLEX PROBLEMS, DESIGN OF COMPONENTS AND SYSTEMS.

PEO 3 NURTURE HUMAN VALUES, CONCERN FOR ENVIRONMENT AND SOCIETY IN THE STUDENTS

PEO 4 INCULCATE PROJECT MANAGEMENT, COMMUNICATION AND LIFE SKILLS IN THE STUDENTS

PROGRAM OUTCOMES

PO 1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO 2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and Engineering sciences.

PO 3: Design/Development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and team work: Function effectively as an individual and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES

PSO 1: Students must be able to apply principles of mechanical engineering, basic science and mathematics to model, analyze, design and realize physical systems and processes.

PSO 2: Students must be able to work professionally in interdisciplinary teams, communicate effectively, and demonstrate time & resource management skills, with knowledge of legal and ethical practices.

Prof. Mahesh Caisucar and Prof. Harichandra Chandekar represented Goa State for All India Civil Services Badminton Tournament held in Chandigarh in March 2022

Prof. Mahesh Caisucar and Dr. Harichandra Chandekar won the Inter Staff Badminton Tournament organized by Goa Engineering College

Published By	**Editors**
Dr. Suraj S. Rane Professor & Head, Mechanical Engineering Department	Dr. Raghavendra D. Naik Flt. Lt. B. R. Kulkarni
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