

## Mechanical Engineering Department



### ***From Department Head***

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It is pleasure to release this issue (2019/20, issue 1) of department e-newsletter. This issue contains details of academic year 2019/20 odd semester. This semester has two notable events for academic fraternity as well as entire engineering community – Teachers' Day and Engineers' Day. We all pay tribute to our great leaders, teachers and engineers, Dr. Sarvepalli Radhakrishnan and Sir M. Visvesvaraya. GCET ASME Student Section organized a mini-tech fest during the month of September as a part of "Teacher's day and Engineer's Day" celebration.

I am happy to share that this issue reflects a note of gratitude and appreciation received from Mr. Jainav Shah, our valued alumnae of M.E.- Industrial Engineering (2014-16) " I earnestly invite all our alumnae to contribute to this newsletter in terms of technical and/or general articles/updates/informative stuff and your journey in GCET and beyond.



### ***Editor's Note***

"The ignited minds of the youth is the most powerful resource on the Earth" said our beloved Honorable Late Shri. Dr. APJ Abdul Kalam. It gives me an immense pleasure to represent as editor of (2019/20, issue 1), department e-Newsletter. India is one of the youngest country of the World. And along with Youth, India since ages has contributed much in the field of innovation. So, are our students, who are using their innovative skills for betterment of the World. In current semester we have undergone activities on innovation and entrepreneurship. Also, we congratulate the students who have received awards for their work and made us proud.

# Programs Organized

## 1. Expert talk on “CEED (Common Entrance Exam for Design)” by Mr. Parth Raval

GCET ASME STUDENT CHAPTER organized a seminar on CEED (Common Entrance Exam for Design) for the students of third and fourth year of Mechanical Engineering department. Design engineering is in great demand in current business scenario and is a highly challenging yet an interesting branch of study. Mr. Parth Raval, who has a Masters in Design (Industrial Design) degree from IIT Delhi conducted the workshop. He explained the role of designers in today’s fast changing world and explained how a good product design helps a company get edge over its competition. He talked about scope of designers in developing countries like India and said that developing countries must invest their resources into design for better growth.

*“There’s nothing I believe in more strongly than getting young people interested in science and engineering, for a better tomorrow, for all humankind.”*  
-Bill Nye



## 2. Expert talk on “A Journey of an Entrepreneur” by Mr. Bhujang Patel

An expert talk on “A Journey of an Entrepreneur” was organized on 31<sup>st</sup> August, 2019. The talk was delivered by Mr. Bhujang Patel – Proprietor – Paritaush Nirman, Anand. Mr. Bhujang has discussed in detail about his journey from graduation, post-graduation, industrial job, foreign visit and finally entrepreneurship in India. He motivated students to be an entrepreneur. He gave insight to the students about challenges and opportunities to be an entrepreneur. This talk was organized by faculty coordinators of Student Start-up and Innovation Policy (SSIP) committee.



*“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”*

*-Buckminster Fuller*

### 3. EXODIA'19

GCET ASME Student Section organized a mini-tech fest on 7<sup>th</sup> September, 2019 as a part of “Teacher’s day and Engineer’s Day “celebration. Today’s engineer must not only be innovative but he must also be sensitive to the environmental impacts etc. Automation is something that is going to be a part of everyone’s lives in a few years. A world dominated by human-controlled robots is not far off. Not only can they perform the task in a better manner, but the robots can also be used in extremely dangerous tasks to achieve accurate results. Keeping all these things in mind, this year’s theme was ‘HUMANOIDS’. Humanoids are the robots which look like humans and are able to perform herculean tasks earlier performed by humans with relative ease. This year more than 200 to-be engineers from all the engineering undergraduate courses of GCET participated in this tech-fest. There were 5 events in total- 3 technical and 2 non-technical. The technical events tend to test a student’s scientific temperament as well as look at the creative side- both of which are essential for a good engineer.



*“The trick to having good ideas is not to sit around in glorious isolation and try to think big thoughts. The trick is to get more parts on the table”- Steven Johnson*

## 4. Department Orientation for 1st Year Students

Department of Mechanical engineering organized an orientation program for welcoming the first-year students and make them acquainted with the department, on 18/07/2019. Department head Dr. Darshak Desai introduced department, faculties, laboratories, and GTU teaching scheme. Department faculties Dr. Mukesh Bulsara, Dr. Manan Desai, Dr. Manish Mehta, Prof. Sankalp Kulkarni, Dr. Mehul Gor, Prof. Faiju Malek and Prof. Ravi Rathod took students for visit to various departmental and central facilities.



## 5. Student Start-up and Innovation Policy (SSIP) Awareness Seminar

*The problem in this business isn't to keep people from stealing your ideas; it's making them steal your ideas!*

*-Howard Aiken*

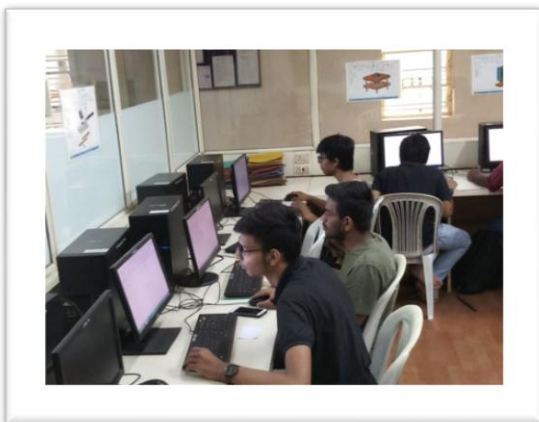
Seminar was organized and delivered by Dr. Mehul Gor and Prof. Afzal Alad on 2<sup>nd</sup> and 3<sup>rd</sup> July 2019. All 3<sup>rd</sup> and 4<sup>th</sup> year student were benefitted from the seminar. Student Startups and Innovation Policy (SSIP) is the initiative of Government of Gujarat that aims to promote institute based ecosystem to support innovations and ideas of young students and provide a conducive environment for properly harnessing their creative pursuit. Awareness of this policy is spread through this seminar. Students were guided to grab this opportunity and motivated to apply for SSIP funds.





## 6. Hands on workshop on 2D drafting and 3D modeling using CAD

On 31st August 2019, PRARAMBH-The GCET Project Club has organized a workshop on “HANDS ON WORKSHOP ON 2D DRAFTING AND 3D MODELING USING CAD”, for the 2nd year mechanical and mechatronics engineering students. To teach them basics of one of the highly recognised CAD 3D modelling software, namely PTC CREO Parametric. In order to make them aware about its capabilities, and widespread of its utility in the Mechanical/Mechatronic engineering domain. The workshop was coordinated by the students of PRARAMBH under the guidance of Dr. Saurin Sheth (Convener, PRARAMBH) and Prof. Aakarsh Jain (Faculty Coordinator). Whereas, student coordinators of the event were Abhishek Tripathi, Chirag kanagiyani, Chirag Thakar, Harsh Purohit, and Shivam Sharma. Among them Chirag Kanagiyani from Mechanical final year and Chirag Thaker from Mechatronics final year have addressed the students during the event. The workshop started at 8:30 AM with great enthusiasm by participants as well as the support team. The whole workshop was divided into 3 sessions. First session included introduction to CAD software, followed by enlightening about the sketch module and the assembly module available in the CREO parametric 2.0 software. At last there was Hands-on exercise sessions for the students on which they can practice what they learnt.



## 7. Alumni Talk

Mr. Malek Javedhusen & Mr. Parmar Pranay (PG Alumnus-2015) interacted with the students of ME (Industrial Engineering) regarding their learnings and experiences. They both are currently pursuing their PhD in Industrial engineering domain from SVNIT Surat.



*“To the optimist, the glass is half full. To the pessimist, the glass is half empty. To the engineer, the glass is twice as big as it needs to be”*  
-unknown

## 8. ISTE Activities

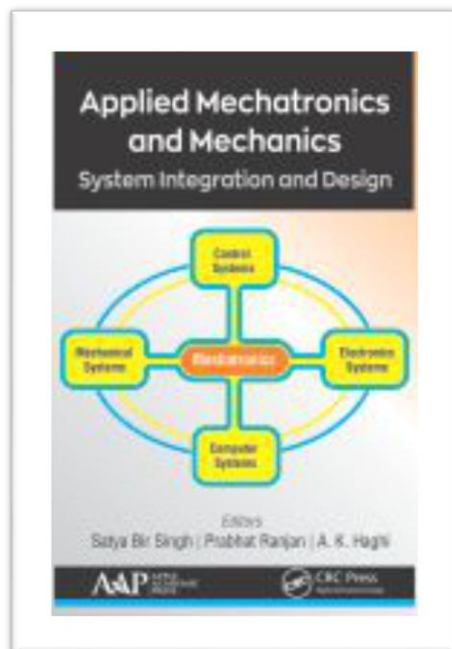
- **Expert talk** on various topics were organized under GCET **ISTE Staff Chapter**, faculties from within institute gave talks on various topics. In this semester Dr. Maulika Patel, Dr. Hemant Thakkar, Prof. Sankalp Kulkarni delivered their talks.
- **Orientation Program was informative session for 1st year students of Mechanical department** organized under ISTE (Indian Society of Technical Education, with aim of giving ideas and making students aware about facilities provided by Mechanical Department and scenario of college and placement details. So that Students can learn what they want to learn using various facilities provided by GCET under guidance of experienced and highly educated faculties. This was an open discussion and doubt solving session successfully conducted by Mechanical students of ISTE Core committee members.
- **‘Career Opportunities for graduate Mechanical Engineers’**, was an interactive session for 3<sup>rd</sup> year students of Mechanical department organized under ISTE (Indian Society of Technical Education) and Mechanical Department, with aim of to prepare students to face the challenges coming after graduation in mechanical. This was open discussion and doubt solving session hosted by Dr. Darshak Desai, Head of Mechanical Department. This session was conducted separately for both the class.

*"If I had nine hours to chop down a tree, I'd spend the first six sharpening my axe"- Abraham Lincoln*



## 9. Book Chapter published

Prof. Purnank Bhatt and Prof. Mihir Solanki worked on a novel research work on Oblique Machining. Their research work is published as a book chapter titled "Experimental investigation and optimization of process parameters in oblique machining process for hard to cut materials using coated inserts" in Applied Mechatronics and Mechanics Book by Apple Academic Press. ISBN number for the same is 9781771888899.

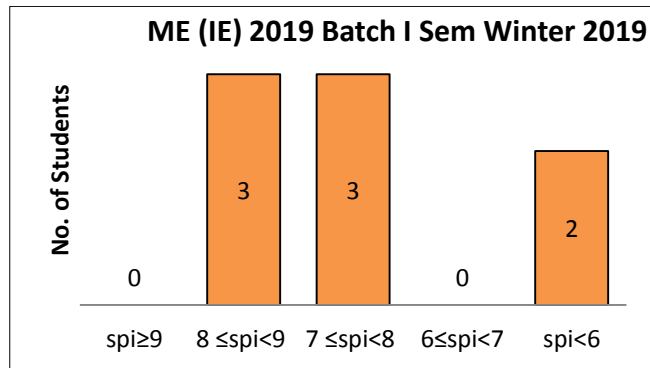
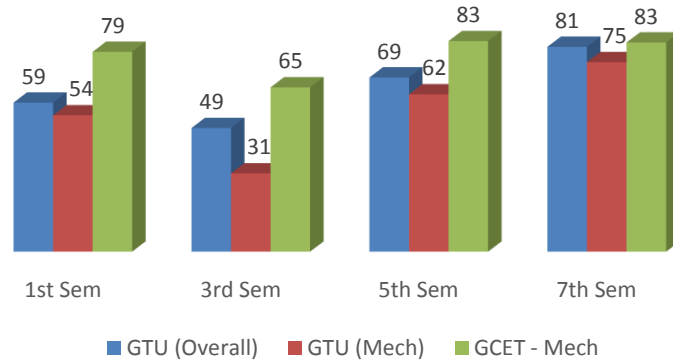




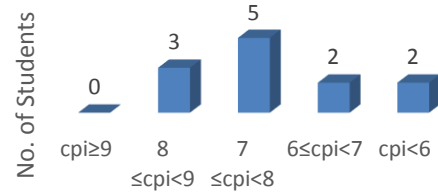
## Result analysis

*Failure is  
the  
opportunity  
to begin  
again more  
intelligently-  
Henry Ford*

### Winter 2019 Result Analysis



### ME (IE) 2018 Batch III Sem Winter 2019



## STUDENT'S ACHIEVEMENT

Institute top Ten Performers from Mechanical Engineering Department in GTU Winter 2019 Exam



**Bhakhar Daksh  
Hareshbhai**  
180110119006  
9.47 CPI in Sem 3<sup>rd</sup>  
Winter 2019



**Patel Nihir  
Subhashchandra**  
180110119079  
9.38 CPI in Sem 3<sup>rd</sup>  
Winter 2019



**Vavadiya Kevalkumar  
Rameshbhai**  
170110119123  
9.16 CGPA and SPI in Sem 5<sup>th</sup>  
Winter 2019

**Congratulations to ME (Industrial Engg.) graduated students for getting opportunity to work with renowned consultancy group Mckinsey & Co. at Dubai, UAE on a special project**



**Paghadal Hareshkumar**

2016 Batch ME (Industrial Engg.) student working at G K Engineers, Ahmedabad



**Vaibhav Patel**

2017 Batch ME (Industrial Engg.) student working at G K Engineers, Ahmedabad



**Shiv Pandya**

2017 Batch ME (Industrial Engg.) student working at Efforts consulting, Ahmedabad

**Special Poster Presentation Award at 10th International Conference of Environmental Research**

First-year students Neel Patel & Jeet Chaliwala received the "Special Poster Presentation Award" at 10th International Conference of Environmental Research during December 2019 at Adi Shankara Institute of Engineering and Technology, Kalady, Kerala. For their work on AGROBEAST: an Automated Solar Seed Power for Agricultural Development of India under the guidance of Dr. Smita Joshi, Asst. Prof. – Applied Sc. & Humanities Dept. of GCET.

**AGROBEAST : AN AUTOMATED SOLAR SEED SOWER FOR AGRICULTURAL DEVELOPMENT OF INDIA**

SSIP

NEEL PATEL<sup>1</sup>, JEET CHALIWALA<sup>1</sup>, DR. SMITA JOSHI<sup>2</sup>

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**ABSTRACT**  
 Accounting country's workforce and economy, agriculture in India is the most flexible sector of all others. Agrobot, an automated solar seed sower has been designed and developed for the implementation of the smart work and green revolution. The additional objectives like providing precision and progressive treatment of each seed. This vehicle is controlled using Arduino UNO microcontroller and motor driver circuit which controls the vehicle to move forward for 1 km and stop still at the place. Moreover, the gear box used for driving the motor is designed to get requirements, such as control device and 2000 rpm rating. Now the gear mechanism holds for 7 seconds, after this process the whole set up moves upward to expose its initial position within 0.4 seconds. Thereafter completing the sowing process, the 70 seeds placed in container are released as a quantity that through a seed dispenser and flow the concrete to the drilled hole by means of a tube. These the particles are spread using ultrasonic pump. This whole set up is connected to a 12 V 5 AH battery which is charged using a solar panel of 100W placed on the top of the vehicle which is responsible for the movement of the seed sowing mechanism. Supervising the coordinates of each and every seed along with time and date, a software is used. The GPS system has got a track with different altitudes of different size and shape for various types of seeds. A software module for feedback check and spray is installed with the user's manual. This software also records fertilizer usage during the whole crop growth. The coordinates of the sown positions are the Arduino UNO microcontroller and 12V 5 AH motor driver which are responsible for time to time controlling of the motors connected in the vehicle.

**INTRODUCTION**  
 • India has a vast open area agricultural land of 142 Mha.  
 • India supports world's population of 18% on agricultural sector.  
 • About 90% of the contemporary tradition, the power generated by burning of fossil fuels to run IC engines or external combustion engines cause of air, water and noise pollution[1].  
 • The recommended row to row spacing, distance between two consecutive seeds, and depth of the seed placement can vary from crop to crop.  
 • Depends on different agricultural conditions.  
 • Typical application of the seed sower is for:  
 • Corns,  
 • Nuts,  
 • Dals and oil seed crops[2].

**OBJECTIVES**  
 Comparison Time, Labor & Energy

Fig. 1 Comparison Between Conventional Sowers and Agrobot

Fig. 2 Agrobot Prototype

**CONCLUSION**  
 It is concluded that this solar powered seed sowing machine can,  
 • Minimize row spacing and controls seed rate.  
 • Control the seed depth and proper orientation of seeds can be done with less loss.  
 • Perform the various simultaneous operations and hence saves labor requirement so as labor cost, labor time and also save lots of energy. Hence, it is easily affordable to farmers.

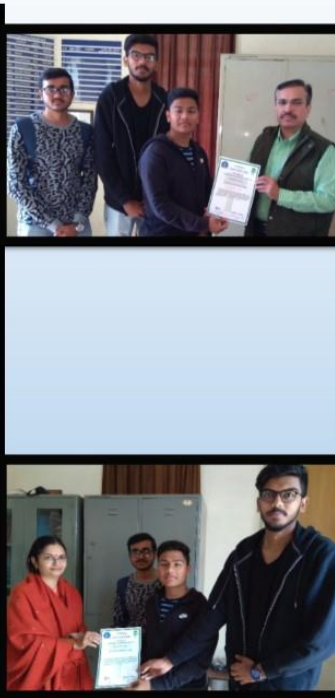
**REFERENCES**  
 [1] D. Ghaley, V. More, M. Lokhande, and S. Joshi, IJERSET 3(4) (2014)  
 [2] R. Shivadas, and R. Kulkarni, IJEA, (2013), 1(2) 107  
 [3] S. Swaha, G. Sureshbabu, IJAEST(3) (2015)

**ACKNOWLEDGEMENT**  
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Sl. No.	Distance between rows	Distance between seeds	Number of seeds
1.	2	2	10,890
2.	3	3	4,840
3.	4	4	2,723
4.	5	5	1,742
5.	6	3	2,420

Fig. 3 Table showing seed spacing, number of seeds and distance between consecutive seeds

Note: The area sown by Agrobot is 1 acre in every 4 hours.



10<sup>TH</sup> INTERNATIONAL CONGRESS OF ENVIRONMENTAL RESEARCH

19-21, December 2019  
 Adi Shankara Institute of Engineering & Technology, Kalady, Kerala, India

**CERTIFICATE**  
 Special Poster Presentation Award

**ICER-19**

This is to certify that Prof./Dr./Mr./Ms. Neel B. Patel..... has been selected by the panel of judges, for Special Poster Presentation Award in..... Poster..... Section..... during 10<sup>th</sup> International Congress of Environmental Research (ICER-19).

Dr. Jacob George C. Convenor  
 Professor-Dr. Subhash C. Pandey Director

## Placement Details

Total number of company visited	Total Number of Students Placed
5	24



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## Industrial Visits

Sr. No	Date	Place	Students	With Faculty
1	22/08/2019	Flovel Valves Pvt. Ltd.	42	Prof. Ravi Rathod Prof. Sukritindra Soni
2	22/08/2019	Inducto Cast	42	Prof. Ravi Rathod Prof. Sukritindra Soni
3	17/09/2019	Micro Flat Datum Pvt. Ltd.	51	Prof. Sankalp Kulkarni Prof. Jvalant Trivedi
4	17/09/2019	Fine Cast (Gujarat) Pvt. Ltd.	51	Prof. Sankalp Kulkarni Prof. Jvalant Trivedi

## From Alumnae



Jainav Shah  
M.E.- Industrial  
Engineering (2014-16)

First of all, I really appreciate your approach for feedback regarding an association with GCET, as it gives an opportunity for improvement. My experience with GCET is life-changing during last 2 years of masters as it taught me lessons of life. Starting from the branch (IE) itself, different and provide good scope for engineers to deal with real-life practical situations. The main crux which makes GCET different from rest of colleges is the nature of faculties, highly qualified as well as down to earth and always ready to help students. Also, help students to make them an actual researcher.