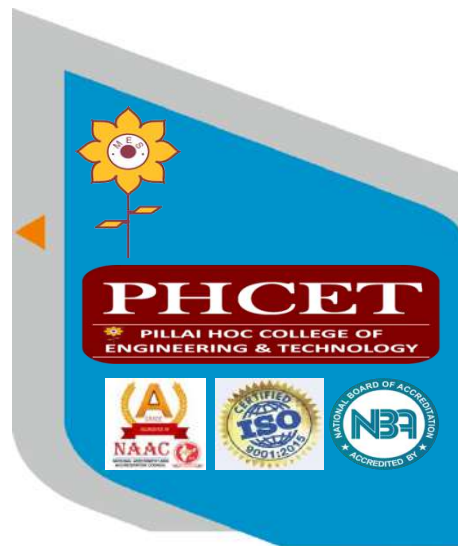




SFA Mumbai Chapter



Newsletter



APRIL 2020

[http:// www.sfa.mes.ac.in](http://www.sfa.mes.ac.in)

PILLAI HOC COLLEGE OF ENGINEERING & TECHNOLOGY RASAYANI

News at a Glance

From the editor's desk

- Golden Jubilee celebration under the leadership of Dr. K. M. Vasudevan Pillai, Founder Chairman & CEO of MES & Dr. Daphne Pillai, Secretary MES



Dr. K. M. Vasudevan Pillai
Chairman & C.E.O.
Mahatma Education Society



Dr. Daphne Pillai
Secretary
Mahatma Education Society

- 50 Years of High Impact Research
- International Students Olympiad 2020
- Safety Matters : Some Facts And Figures On Fire & Road Accidents
- Activities of the Chapter during Oct. to Jan. 2020
- World Quality Month & Constitution Day Celebration-2019
- Events Organized:
- Two Days Outreach program on "Materials Manufacturing & Drone workshop" In Association With Industries & Professional Societies
- Forthcoming Events
- Metallography for Industries
- Structural integrity of Welded Structure
- Design Materials Selection & Fracture Control for Gears
- Structural Integrity of Welded Structures
- Design, Material Selection & Fracture control for

Editor: Prof. R.C. Prasad

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From Editor's Desk

Challenges and Opportunities During and Post COVID-19

This issue of the Newsletter is dedicated to the golden jubilee celebration of the Mahatma Education Society. A notable achievement of the Pillai HOC College of Engineering and Technology at Rasayani is that it is ISO 9001:2015 certified and NAAC 'A' grade accredited in its first attempt. Besides this, the Mechanical and Computer Engineering Departments of PHCET are NBA Accredited. Obtaining NAAC A grade and NBA Accreditation is a testimony that our educational quality meets the higher standards for certification and quality control requirements of the educational training amongst engineering institutes of higher education in the state of Maharashtra and the country. During the 107th Indian National Science Congress held on January 3rd, 2020 at Bengaluru, Hon. Prime Minister Shri Narendra Modi in his inaugural address set motto of "Innovate, Patent, Produce and Prosper" to the younger scientists. He stated that innovation for the people and by the people is the new direction of new India.

India has improved in global innovation ranking from 86th position in 2014 to 57th place in 2019. On the lines of NIRF & QS ranking of world universities the Govt. of India introduced Atal Ranking of Institutions on Innovation Achieved. ARIIA ranks institutes of higher education and Universities based on 7 parameters related to Innovation & Entrepreneurship Development amongst students & faculty. The parameters include business model of Revenue generation & sharing, Infrastructure to support startups & promote Entrepreneurship, moving research from Lab to Market, adoption of Innovative Teaching & Learning Methods. The objective is to develop institutes that are globally competitive. Our Education market is large in size. The gross enrolment ratio in higher education reached 26.3 in 2018-19. Our country has become the second largest market in e-Learning after USA. The Education sector is expected to reach USD 1.96 billion by 2021 with around 9.5 million users. According to media reports & press releases, Govt. has ambitious plans to boost Education market to emerge as a single largest talent provider in the field of Higher Education and one of the top 5 countries in the world in terms of research output with an expected R&D annual spend of USD 140 b.

On May 19, 2020 union finance minister announced several interventions to convert COVID-19 challenges into opportunities for the Education Sector that includes expanding e-Learning in higher education that is expected to grow upto 38% in the next 2-4 years by liberalizing regulatory framework. MHRD, Govt. of India is planning to raise around 1 lakh crore (USD 15.52 billion) from private companies and high net worth individuals to finance improvement of Education Infrastructure in the country. For Revitalizing Infrastructure & Systems in Education (RISE), Govt. has already proposed a budget allocation of Rs.3000/-crore for 2020-21. According to data released by Department of Promotion of Industries & Trade (DPIIT), the total FDI inflow into Education Sector is expected to be around USD 3 billion.

Let us make a resolution to convert the challenges posed by the current COVID crisis into opportunities by offering value added courses and activities, identifying thrust areas, emphasize on multi-disciplinary learning, enhance R&D activities, transform teaching and learning and outreach activities to improve our perception in the public and industries. Let us resolve that a change is possible and we are capable of making it happen for the development and progress of our institute.



Editorial: 50 Years of High Impact Research

The first issue of *Metallurgical Transactions* appeared in 1970, with Gerhard Derge of the Carnegie Institute of Technology as Editor. The journal formed as a result of the merger of *Transactions of the Metallurgical Society of AIME* and *Transactions Quarterly* of the American Society for Metals. In 1975, the journal split into *Metallurgical Transactions A* and *B*, specializing in physical and process metallurgy, respectively. The journals were renamed *Metallurgical and Materials Transactions (MMT) A* and *B* in 1994. The non-profit MMT journals are jointly managed by TMS and ASM and support a broad range of professional activities within the societies. MMT serves the entire international community, with broad geographical representation on the editorial board.

It is interesting to consider the 10 most highly cited papers of 1970, which will be familiar to many:

- *Dispersion Strengthened Superalloys by Mechanical Alloying*, J.S. Benjamin, <https://rd.springer.com/article/10.1007/BF03037835>
- *The Relation Between Polycrystal Deformation and Single-Crystal Deformation*, U.F. Kocks, <https://rd.springer.com/article/10.1007/BF02900224>
- *The Effect of Carbide and Nitride Additions on the Heterogeneous Nucleation Behavior of Liquid Iron*, B.L. Bramfitt, <https://rd.springer.com/article/10.1007/BF02642799>
- *The Influence of Alloying, Temperature, and Related Effects on the Stacking Fault Energy*, P.C.J. Gallagher, <https://rd.springer.com/article/10.1007/BF03038370>
- *The Temperature Dependence of the Flow Stress of the γ' Phase Based upon Ni_3Al* , P.H. Thornton, R.G. Davies, and T.L. Johnston, <https://rd.springer.com/article/10.1007/BF02819263>
- *The Origin of Freckles in Unidirectionally Solidified Castings*, S.M. Copley, A.F. Giamei, S.M. Johnson and M.F. Hornbecker, <https://rd.springer.com/article/10.1007/BF02643435>
- *The Martensite Phases in 304 Stainless Steel*, P.L. Mangonon and G. Thomas, <https://rd.springer.com/article/10.1007/BF02642003>
- *The Role of Dislocations in the Flow Stress Grain Size Relationships*, J.C.M. Li and Y.T. Chou, <https://rd.springer.com/article/10.1007/BF02900225>
- *Interdendritic Fluid Flow and Macrosegregation; Influence of Gravity*, R. Mehrabian, M. Keane, and M.C. Flemings, <https://rd.springer.com/article/10.1007/BF02900233>
- *The Role of Oxide Microstructure and Growth Stresses in the High-Temperature Scaling of Nickel*, F.N. Rhines and J.S. Wolf, <https://rd.springer.com/article/10.1007/BF02642020>

In 2020, there is still active research on the material systems in these papers as well as on the phenomena studied, enabled by remarkable developments in instrumentation, theory, computation, and data-driven approaches. Entirely new material systems have emerged since 1970, including nanostructured materials, intermetallic compounds, metallic glasses, TRIP/TWIP steels, and high entropy alloys. Processing innovations have also been prominent, with recent examples including friction stir welding, equal channel angular extrusion, strip casting, and many variants of additive manufacturing. Atom probe tomography, electron backscattered diffraction, high-resolution scanning transmission electron microscopy, synchrotron X-ray diffraction, high temperature *in situ* observations, and many other instrumentation innovations have brought important new insights to material structure and properties. Advances in theory and simulation, from the atomic scale (density functional theory, molecular dynamics), to the micro-scale (dislocation dynamics, phase field, cellular automata) and the macroscale (crystal plasticity finite element analysis, fluid flow and solidification) have also revolutionized our understanding and guided us toward the new materials and processes reported each year in MMT.

To highlight the rich scientific tradition of MMT, the editorial team has invited a series of articles from distinguished scientists on current topics of interest to the community. These articles will appear in free-access form in issues published throughout this volume year, and will be accessible at <https://www.springer.com/journal/11661> (MMTA) and <https://www.springer.com/journal/11663> (MMTB), within the Collections link. (The entire collection across both journals can be found at <https://www.springer.com/journal/11661/updates/17852226>.) The papers convey the current understanding of a wide spectrum of phenomena related to materials structure, processing, and properties, and point to important challenges for the future. The next 50 years will undoubtedly be an equally exciting time for materials, and *Metallurgical and Materials Transactions* will continue to evolve in scope, content, and delivery to continue to convey, with the highest standards, the emerging and ever-evolving research of this field.

Qform Olympiad-2020

Due to prevailing COVID-19 condition throughout the globe the QForm decided to offer cloud licence directly to 10 students who had internet connection, with 64 bit computer for online training and final test on May 16,2020. Ten students were selected from a list of 100 willing student participants. The student details (names, email ids, phone nos.) were sent to QForm to issue cloud licence to them. A WhatsApp group of participating students was formed and students were guided to install the software. Online training was provided on Saturday, May 9, 2020 through Google meet.

Olympiad 2020 test across the globe was conducted on May 16,2020 during 10.30 to 4.30 pm with a 30 minutes gap during 13.00-13.30 hrs. The test reports of students were sent at 4.30 pm for evaluation by an International expert committee.

The photographs of some of the participating students are enclosed along with details of Olympiad-2019 in the next page.



INTERNATIONAL STUDENTS OLYMPIAD 2019

Organized by



in

Hot Bulk Forging Technologies

On

May 16, 2019

Supported by



Venue: B-404, Engineering Building, PHCET, Rasayani

Some of the Photographs of the International Students Olympiad -2019

List of 41 Universities from 14 countries around the world participating in Olympiad 2019 is given below:



<p>Bulgaria:</p> <p>1. Technical University of Sofia (Olympiad 2017 Organizer)</p> <p>China:</p> <p>2. Hebei University of Science and Technology</p> <p>3. Yanshan University</p> <p>4. Beijing Jiaotong University (Olympiad 2017 Organizer)</p> <p>Germany:</p> <p>5. IfU of Stuttgart (Olympiad 2017 Organizer)</p> <p>6. Fachhochschule Südwestfalen (Standort Meschede)</p> <p>7. HTL Carinthia-Sonnbühl (Olympiad 2017 Organizer)</p> <p>8. Bergakademie Freiberg</p> <p>India:</p> <p>9. Pillai College of Engineering (Olympiad 2017 Organizer)</p> <p>Jordan:</p> <p>10. Jordan University of Science and Technology (Olympiad 2017 Organizer)</p> <p>Macedonia:</p> <p>11. Ss. Cyril and Methodius University of Skopje (Olympiad 2017 Organizer)</p> <p>Poland:</p> <p>12. AGH University of Science and Technology (Olympiad 2017 Organizer)</p> <p>13. Wrocław University of Technology</p> <p>Romania:</p> <p>14. University Politehnica of Bucharest (Olympiad 2017 Organizer)</p> <p>Ukraine:</p> <p>15. National Metallurgical Academy of Ukraine (Olympiad 2017 Organizer)</p> <p>16. Donetsk State Technical University</p>	<p>Russia:</p> <p>17. Bauman Moscow State Technical University</p> <p>18. National University of Science and Technology 19. MISIS (Olympiad 2017 Organizer)</p> <p>19. Omsk State Technical University (Olympiad 2017 Organizer)</p> <p>20. Izhmash State Technical University (Olympiad 2017 Organizer)</p> <p>21. Saratov State Technical University</p> <p>22. Moscow Aviation Institute</p> <p>23. State National Research Polytechnical University of Perm</p> <p>24. Peter the Great St. Petersburg Polytechnic University (Olympiad 2017 Organizer)</p> <p>25. Lipetsk State Technical University</p> <p>26. Moscow State University of Mechanical Engineering</p> <p>27. Moscow Aviation Institute Shuysko campus</p> <p>28. Konsenskiy-on-Amur State Technical University</p> <p>29. Baltic State Technical University</p> <p>30. South Ural State University</p> <p>31. Naberezhnoyechninskii institut KFU</p> <p>South Korea:</p> <p>32. Kongju National University (Olympiad 2017 Organizer)</p> <p>Taiwan:</p> <p>33. National Sun Yat-sen University</p> <p>34. National Kaohsiung University of Applied Sciences</p> <p>35. National Formosa University</p> <p>36. National Chunghua University of Education</p> <p>37. National Chung Hsing University (Olympiad 2017 Organizer)</p> <p>Turkey:</p> <p>38. Gebze Technical University (Olympiad 2017 Organizer)</p> <p>Vietnam:</p> <p>39. Hanoi University of Industry</p> <p>40. Hanoi University of Science and Technology (Olympiad 2017 Organizer)</p> <p>41. Le Quy Don Technical University</p>
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CERTIFICATE

SPECIALIST No 859
This certificate verifies that

Student of
Pillai HOC College of Engineering and Technology, India,
Vaibhav Kanoje

is a certified specialist and has the skills to work in Qform software for simulation of metal forming processes, including preparing geometrical models, performing simulations and analysing results.

Software version: QForm Vx 8.2

Qualification report topic: Design of the ring-type part hot forging process as Olympiad task

Seray Stellanov
Attorney
QFX Simulations Ltd.



8 June 2019

Yury Gladkov
Managing Director
QuantorForm Ltd.



www.qform3d.com

CERTIFICATE

FOR ORGANIZING

QForm National Students Olympiad in Hot Bulk Forging and Extrusion Technologies

Professor
R.C. Prasad
Pillai HOC College of Engineering and Technology (PHCET)

For the great contribution to the training of students in metal and for helping in organizing National Students Olympiad in Hot Bulk Forging and Extrusion Technologies.
(On behalf of Bauman Moscow State Technical University (BMSTU), Russian Machine State Technical University (IMSTU), QForm Group and the Co-ordinators of the International Students Olympiad in Hot Bulk Forging and Extrusion Technologies 2019 we wish to thank you sincerely and convey our support)
We are looking forward to further fruitful cooperation.

Stellanov Seray

QFX Simulations Ltd.

QFX Simulations Ltd.

QFX Simulations Ltd.



28 April 2019

Gladkov Yury

QuantorForm Ltd.

QuantorForm Ltd.

QuantorForm Ltd.



www.qform3d.com

SAFETY MATTERS

SOME FACTS AND FIGURES ON FIRE & ROAD ACCIDENTS

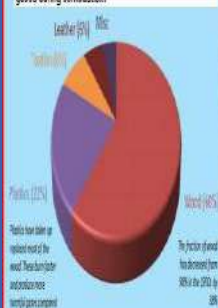
Some recent incidents of fire due to flaws in fire safety policies:
 May 24, 2019: a fire broke out due to electrical short circuit in the building that housed a coaching institute in Surat
 The country was shocked to see on TV the boys and girls jumping out of building. (22 young lives were lost).
 2019, World famous Notre-Dame Cathedral in Paris went up in flames causing serious damage to its roof.
 More than 80% of building fires are attributed to electrical faults.

Visible identifiable causes of electrical fires listed in a PhD thesis 2018 by J. N. Martels of University of Germany are : Light flickering, Dimming, power Interruption, Fuse Blowing, Breaker Tripping, Bulbs Burning out, Slow moving appliances
 A literature review on fire and road accidents are presented in this poster.



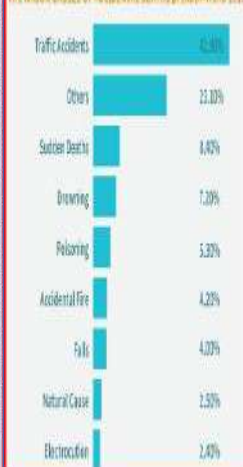
Even after installing MCBs, MCCBs, ACBs & VCBs fires are reported to take place due to 20 factors given below.

Intensification brings challenges for public safety. Modern building use materials and facades that have higher risk of fire. Due to high calorific values they produce more toxic gases during combustion.



A study was conducted at IIT Gandhinagar where several office and residential buildings were assessed for their fire loads (a metric of items that can burn in the event of a fire). The study involved survey of over 5000 sqm. of areas of office and residence type and a detailed characterization of the fire loads. Based on a similar study performed in India in the 1990s, the current study found that the average fire loads have increased by about 3 times in the last two decades. This fire load was found to be contributed by 34-50% cellulosic materials (wood, paper, etc.), 18-22% plastics, 7-9% textiles and 4-6% leather. A similar proportion cellulosic and plastic materials has been reported by studies in other countries as well. It is worth noting that in a study conducted in the 1970s, the proportion of cellulosic materials was reported to be 90%. This indicates that the drop of about 20% in the proportion of cellulosic materials is compensated by the appearance of plastic materials. Of course, most plastic materials burn more readily and produce more toxic fumes when compared to cellulosic materials.

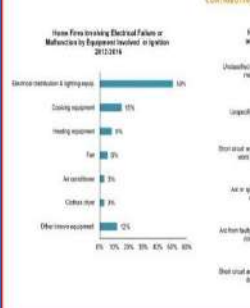
THE MAJOR CAUSES OF ACCIDENTAL DEATHS IN INDIA-2018



NFPA RESEARCH REPORT ON HOME ELECTRICAL FIRES - MARCH 2019

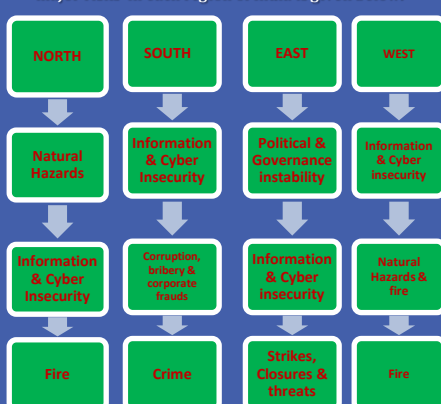
The National Fire Protection Association (NFPA) recently published a study on fires involving electrical failures in the home - a study of 44,000 fires over the period 2013-2018. The analysis was based on data provided by local fire departments and the National Fire Incident Reporting System (NFIRS) and covered largely home fires.

Home fires involving electrical failures or malfunctions caused an estimated average of 460 civilian deaths and 1,260 civilian injuries in the US each year in 2013-2018, as well as an estimated \$2.3 billion in direct property damage a year.



Type of Fault	RISKS			
	Fire Risk	Electro-cution	Equipment Damage	Efficiency loss
Short circuit		X		
Over current		X		
Earth leakage	X	X	X	
Critical Overvoltage	X		X	
Critical Undervoltage	X		X	
Arc faults	X		X	
Neutral loss	X	X		
Surge	X		X	
Earth voltage	X	X	X	
Phase/Line loss	X	X		
Phase Reversal			X	
Voltage harmonics			X	
Short term interruptions			X	
Voltage variation			X	X
Voltage unbalance			X	X
Current unbalance	X		X	X
Current harmonics	X		X	X
Power factor			X	X
Inrush current			X	
Reverse current		X		

According to India Risk Survey (IRS) the three major risks in each region of India is given below.



The year trends of overall risk ranked by Pinkerton is shown below



ELECTRICAL CHARGES OF FIRES IN INDIA



World Quality Month & Constitution Day Celebration-2019

At the initiative of Mahatma Education Society the PHCET & PHP

IN ASSOCIATION WITH INDUSTRIES & PROFESSIONAL SOCIETIES

Organized constitution day celebrations along with World Quality month for creating awareness regarding fundamental duties and responsibilities amongst students, faculty and industries as per program given below



Date : November 26, 2019
Time : 14:00 to 16:00 hrs

Venue:
Conclave, 1st Floor
Pillai HOC College of Engineering & Technology Rasayani



14:00-16:00 hrs	Program Itinerary
14:00 to 14:10	Inauguration
14:10 to 14:15	Reading the Preamble of Indian Constitution
14:15 to 14:30	Quality Consciousness Dr. Joseph T Mathew, Professor, Dept. of Computer Science of Engineering PHCET Rasayani
14:30 to 15:00	Quality Technical Education to Meet Local & Global Challenges Dr.R.C.Prasad Ex Professor IIT Bombay, Prof. Department of Mechanical Engineering PHCET Rasayani
15:00 to 15:45	Presentation from Industries & Professional Societies Open Session for Discussion
15:45 to 16:00	Vote of Thanks Followed by High Tea

The function started by reading the preamble of the Indian constitution and to strive towards excellence in all fields



November is also recognized as the world quality month throughout the globe. On this occasion the role of quality and its importance in industries and institutes of higher education was emphasized by lectures on concepts of quality, quality consciousness and quality technical education to meet the local and global challenges. Some of the photographs taken on this occasion are shown below:



Dr. Madhumita Chatterjee Principal PHCET Rasayani welcomed the guests and highlighted the importance of the occasion



Professor R.C. Prasad Convener & Vice Chair ASQ-LMC Mumbai explained the concept of Root Cause Analysis & emphasized the role of quality education in nation building and enhancing employability by enriching "Teaching-Research Synergy & Education-Industry interaction"



Mr. Satyanarayan Joddabge General Manager JAY Precision Product (I) PVT. LTD. presented an overview of quality concepts

Dr. Joseph T Mathew Professor, Department Of Computer Science and Engineering emphasized the importance of quality consciousness. The program ended with the vote of thanks followed by High tea.

W. Edwards Deming introduced the 14 POINTS FOR MANAGEMENT which, he said, "there are simple to make it possible for people to work with you."



The PARETO PRINCIPLE, or 80-20 rule, states that 80% of problems come from 20% of causes, and that management should concentrate on the 20%.



In 1980 NBC aired the documentary "IF JAPAN CAN, WHY CAN'T WE?" and shined a spotlight on the gap between Japanese product quality and that of the United States.



PHILIP B. CROSBY is perhaps best known for promoting a standard of excellence based on nothing—the concept of ZERO DEFECTS



PLAN-DO-CHECK-ACT is not only the name of a popular process improvement method, it's also the title of a CD released in 2014 by a New Jersey-based rock trio called Recovery Council.



The term ISO (as in ISO standard) derives from the Greek word "isos," which means EQUAL.



Two Days Outreach program On Materials Manufacturing & Drone workshop

IN ASSOCIATION WITH INDUSTRIES & PROFESSIONAL SOCIETIES

Organized by

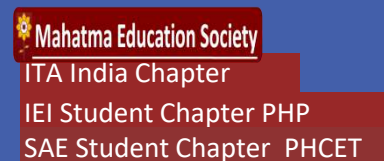


Date : December 20-21, 2019
Time : 9.00 am to 5.00 pm

Venue:
Conclave, 1st Floor

Pillai HOC College of Engineering & Technology Rasayani

Supported by



Introduction :

- This program is an outreach program aimed to expose concepts of advanced materials manufacturing on the first day followed by its applications for Drone making & flying on the next day.
- It will provide hands on expertise on Design, Assembly & Applications of Printed Circuit Boards and Sensors / 3D Printing of plastics
- The students of Class IX, X, XI and XII can participate in this program to get an opportunity to meet and network with students from other schools, faculty and representatives from Industries.
- The program will be conducted under the direction of Professors, Industry experts and students from IIT Bombay and PHCET Rasayani
- The objective of this program is to excite and engage young minds to pursue career in Engineering
- It will consist of short lectures and interactive lab sessions culminating in drone workshop, where students will be taught how to assemble a Palm-top Drone and learn to fly it using an App on their Smart phones, which they can download from internet
- Each team will be handed over the components of drone kit, which will be collected back at the end of the workshop
- All the participants should bring a fully charged Smart-phone along with chargers
- There will be a drone flying competition after the workshop and members of Top 2 teams will be awarded a certificate and a prize.
- A participation certificate will be issued to all who successfully complete the workshop
- **SELECTION PROCESS :**
- Each school will select two to four students who have basic knowledge of Physics, Chemistry, Math and Strong interest in pursuing Engineering Career
- These students should be asked to prepare PPTs (max. 3 slides) indicating why do they want to learn about materials along with different applications of drones. The first slide should include the names of the students, Class & Name of the school with Address of the contact person
- The PPTs should be sent to the Workshop Director by email (rcprasad@mes.ac.in) on or before Dec. 12, 2019
- The selection of maximum 60 students from different schools will be intimated by Dec.15, 2019.
- **THIS IS AN SPONSORED PROGRAM AND THE STUDENTS DO NOT HAVE TO BEAR ANY COST EXCEPT THEIR TO AND FROM EXPENSES**
- **LUNCH & EVENING SNACKS WILL BE PROVIDED TO THE STUDENTS AND THEIR ESCORTS/GUARDIANS BY THE ORGANIZERS WITHOUT ANY CHARGES**
- **THIS IS A DAY WORKSHOP AND SPONSORED STUDENTS MUST BE ACCOMPANIED BY SCHOOL ESCORTS/GUARDIANS ON BOTH DAYS**

For Further Information, please contact

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Professor, Department of Mechanical Engineering PHCET Rasayani
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Email :- rsspapa@gmail.com / rcprasad@mes.ac.in
Web :- www.sfa.mes.ac.in



Two Days Outreach Program on
“Materials Manufacturing & Drone Workshop”
In Association with Industries & Professional Societies




Drone Workshop



::Venue::
Pillai Center for Innovation & Research

::Date::
 20.12.2019 – 21.12.2019

:Organised by:

PHCET
PILLAI HOC COLLEGE OF
ENGINEERING & TECHNOLOGY

SFA
Mumbai Chapter

PHP
PILLAI HOC POLYTECHNIC



MUMBAI BRANCH



Materials Manufacturing

For Further Information, please contact:
 Dr. R.C. Prasad | Workshop Director & Vice Chairman SFA Mumbai Chapter
 Email ID: rcprasad@mes.ac.in
 Mobile: 9869236812

Supported by:








Day 1 : December 20,2019

Program Itinerary

9:00 – 10:00 hrs	Inauguration Introduction to design, assembly & applications of PCBs, Sensors & 3D printing	
10:00 – 12:30 hrs	Group 1 Hands on Lab session & experiments on PCBs	Group 2 Hands on Lab session & experiments on sensors, 3D printing & Laser Cutting
12:30 – 13:30 hrs	Lunch	
13:30 – 15:30 hrs	Group 1 Hands on Lab session & experiments on sensors, 3D printing & Laser Cutting	Group 2 Hands on Lab session and experiments on PCBs
15:30 – 17:00 hrs	Visit to toys making factory (Subject to approval by Jay Precision Products India Pvt. Ltd. Rasayani)	

Day 2 : December 21, 2019

Program Itinerary

8:30 – 9:30 hrs	Inauguration Inaugural Address by Prof. R. K. Pant, Dept. of Aerospace Engg., IIT Bombay
9:30 – 10:30 hrs	Introduction to Quadrotors and Multirotors
10:30 – 10:45 hrs	Introduction to Palm -Top Drone Kit
10:45 – 11:45 hrs	Palm -Top Drone assembly
11:45 – 12:15 hrs	Safety instructions and Drone flight testing
12:15 – 13:15 hrs	Lunch and Battery Charging
13:15 – 14:15 hrs	Drone Practice Session
14:15 – 15:15 hrs	Drone Flying Competition : Qualifier round
15:15 – 15:45 hrs	Tea break and Battery charging
15:45 – 16:30 hrs	Drone flying competition : Final Round
16:30 – 17:00 hrs	Distribution of Certificates and closing ceremony

The MES in association with industries and professional societies like SFA, AESI and IWPA conducted a two days outreach programme on materials manufacturing and drone workshop during December 20-21, 2019 at the center of innovation and research, PHCET Rasayni. The program aimed to reach out to school students from remote areas to excite and empower them to pursue careers in Engineering and activities related to materials manufacturing for aviation and aerospace. The brochure and the programme has been given earlier. Prof. R. K Pant, Dept of Aerospace along with a team of students from IIT Bombay conducted the workshop on Drone Assemblies and Flying Competition. Total 15 teams comprising 2 to 3 students drawn from different school participated. The occasion was graced by Capt. Mohini Shroff founder and board member of IWPA and the first lady who participated in the air race India organized by AESI 2003. Some of the photographs of the workshop are enclosed below.















INDIAN SOCIETY FOR TECHNICAL EDUCATION



FOUNDED 1968

SHORT-TERM TRAINING PROGRAMMES (STTPS)

On

Composites: Fracture Toughness, NDE & Failure Analysis

Date : June 22, 2020 To June 26, 2020

Venue: Seminar Hall, PHCET, Rasayani

COURSE DETAILS			
1.	Significance & Objectives of the programme (list one or two major objectives)	Light Weight, Corrosion & Damage Resistant Taught Composites are used for many critical applications in Automotive, Aerospace, Defense and Marine Industries. The applications in different sectors have a dramatic impact on Gross National Product and Employment Opportunities in our country. The objective of this program is to provide : 1. Basic Understanding of Manufacturing, Mechanical Properties and Damage Mechanisms to prevent failures of composites during service. 2. Testing and Evaluation of Composites using Fracture Mechanics and Advanced NDT Methods	
2.	Course Content/Coverage (List 5 to 8 major topics with proposed duration of coverage in hours for each topic)	Topic	Duration
		1. Synthesis of Metal, Ceramic, Polymer & Rubber Composites for Automotive, Aerospace, Defense and Marine Applications	09 hrs.
		2. Nanofiber & Nanocomposites: Synthesis & Characterization	02 hrs.
		3. Fatigue, Fracture & Failure Analysis of Composites	08 hrs.
		4. Fracture Toughness & Non destructive Evaluation using Fracture Mechanics Principles	09 hrs.
		5. Corrosion Behaviour of Composites	04 hrs.
		6. Mechanical & Fracture Toughness (K_{IC} , G_{IC}) Testing of Composites & their relevance to performance	04 hrs. Practical
		7. Processing Composites / 3D Printing & Fracture Toughness of 3D Printed Plastics	04 hrs. Practical
		8. New NDT Techniques including Computed Tomography for Defects Detection in Composites	04 hrs. Practical
		9. Industrial Visit	04 hrs. Practical
3.	Course Schedule	Total working days = 05 Lecture = 32 hrs. Laboratory/Practical = 12 hrs. Industrial/Field Visits = 04 hrs. Total hours engaged = 48 hrs.	
4.	Details of special equipment or laboratory facilities available for the course	Wet Lay-up, Vacuum Bagging, Vacuum Infusion Processing set up for PMC, 3D Printing of Plastics, Thermography, Mechanical Testing (Tensile/ Shear / Impact / Hardness)	
5.	Collaboration with industry/ other institutions/ departments (indicate name of organization, nature of collaboration and experts involved)	1. Dr. K. Rajkumar, Director Indian Rubber Manufactures Research Association Thane Mumbai 400604, (Standardization & Quality Concern for Rubber Blades / Composites) 2. Dr Manoranjan Patri, Director NMRL, (Evaluation of Toughness, Corrosion and Damage Mechanics Using SEM) 3. Dr. G.S. Prabhu, Technical Director, FINE FINISH ORGANICS PVT. LTD.,(NABL Accredited) (Tensile Testing of Composites)	

For further queries please contact:

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