The Arrow

Department of Aeronautical Engineering Newsletter

2017-18 odd semester

Volume 2 issue 8

KUMARAGURU college of technology
character is life

Character is Life

- Arutselvar N.Mahalingam

Shock wave conference

KOSMORENA'17 from SEDS club

Aircraft design contest 2017

Aeromodelling

HoD's Message:

The department has brought continuous improvement in the academic research and placement performance. It gives me an immense pleasure to express that the department has conducted a milestone event with the presence of professors from various discipline from IISC and NIHMANS. The student participation and indulgence in various co curricular and extra curricula activities has raised quite a fold which is more than satisfactory. As we launch a new academic year we are looking forward for a further growth.

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Note from the editors

The events happened in this semester are vast and rich. The key events includes Kosmoreena17 which contains myriads of small segments which connected both school and college students in to the event. The bench mark event of the department is the shockwave conference sponsored by science acadamies It was attened by professors from IISC and this could be read at page 11. The awareness program conducted for the school students is a key occasion for the department in the outreach segment. Overall this semester is convincing enough with events and occasions.

AIRCRAFT DESIGN CONTEST 17

UDAN SCHEME

Aeronautical Engineering Department of KCT organized second edition of Aircraft Design contest "KCT Aircraft Design Contest 2016 (KCTADC 2016)" on Dr APJ Kalam's birthday, 15th October 2016 as a Tribute to his contribution to Indian Aeronautical Industry. Dr APJ Kalam had "Vision 2020 for passenger aircraft". It mainly focuses on fulfilling the need of Indian civil aviation requirement by indigenous design. To realize his dream and to take it to younger generation this contest is being conducted at KCT.

The department conducted aircraft design contest on the birthday of our beloved missile man Dr.A.P.J Abdul kalam. It is a conceptual aircraft design contest. Student teams from various colleges participated and presented their design in front of the juries, who are from HAL, NAL and DRDO. The event was coordinated by Dr.Prem kumar of our department. It was our tribute to the dreams of Kalam, who wanted a commercial commuting aircraft indigenously designed by India.

The theme of the competition was to design an aircraft in adherence with the UDAM scheme announced by the Indian government. The contest specifically asked the participants to design a short take-off and landing aircrafts. The participants must include the design suspects that would accomplish this attribute. Many of the teams came up with innovative designs. The design report, technical content and the report carried marks that would be a criterion to announce the winners.

It was a successful event with the participation of teams from SRM university, Manipal university, Bharath university etc. It was planned to allow our students also to participate and compete with the other college students. The winner of Aircraft design contest

ALUMNI VISIT

Ms.Tharika, KCT Alumnus pursuing integrated PhD in Auburn university, USA handled the session on opportunities and challenges in higher studies. The targeted audience were third and final year students.

Ms.Tharika who went on to her higher studies with full scholarship clarified various queries from the students on the aspect of higher studies overseas. The talk was conducted at the Third year class room on 18/8/2017 .

She is currently doing her PhD in combustion instabilities

DEPARTMENT ASSOCIATION INAUGURATION

This year's Department association started with an inauguration event which was presided by the chief guest Dr.Kumaran Ganesan, Head of Manufacturing Engineering, GKN Aerospace, Bangalore.

It's an event where the official announcement of office bearers for the association made. New president and the office bearers state their plans on the students activates for the next academic year

Visit of IOWA state university Professor

Dr.Ganeshan Rajagopalan an Asociate professor of IOWA state university graciously accepted to vist the Aero department during his visit to India. He is the Aerospace professor whose research

interest lies in the area of computational fluid dynamics and he has conducted many research projects along with NASA. One of his contribution is the development of ROT CFD a code developed to predict the flow physics in all the rotating blade structures. He gave a talk to the second and third year students on the emerging trends in the Aerospace domain and the importance of CFD. He also explained the development of ROT CFD

AEROMODELLING CLUB ACTVITIES

Aero modelling workshop was conducted for the second year students to design and fabricate chuck glider models using balsa wood. It is a basic flight construction class conducted by the Aeromodelling club. Students understand the gliding characteristics of a fixed wing powerless model.

Aeromodelling Flying training and balsa construction

It's a two-day class where the students learnt about rubber powered model. The class provided the students to fabricate and fly their models as well. Conducted on 11/11/2017

KOSMORENA'17

KCT SPACE WEEK 2017

The inaugural ceremony began at 10:00 am with a prayer song. Special address was given by Dr.R.S.Kumar with an introductory talk on SEDS and KOSMORENA event. The inaugural address was given by the wing commander Gaurav Pratap

And gave a talk on Air force. After that felicitation of was wing commander Gaurav Pratap done by Dr Guruswamy(Advisor of KCT) sir. The Key note address was given by Retd. ISRO Scientist Mr.R.Arunachalam. He gave a detailed discussion about various scopes in ISRO and gave a presentation about missiles, rockets. After that felicitation to wing commander Gaurav Pratap was done by Dr Guruswamy(Advisor of KCT) Sir.Finally, vote of Thanks was given by president of SEDS Club Mr.B.Nishanth.

The space exhibition of K17 was inaugurated by the chief guest DR. Arunachalam, Scientist, ISRO Satellite centre. The exhibition was common to all schools, colleges, parents and faculty members and conducted on both days of kosmorena. About 15 models were displayed, those models are fabricated by the Team SEDS KCT and a startup company called Hyroristic innovations. i.e, curiosity rover, mangalyaan, chandrayan 1, space x falcon 9, PSLV, GSLV, Mars rover, IRNSS, G sat, Brahmos etc. As a part of space exhibition, our Indian Air Force Stall under the guidance of wing commander Mr. Gaurav Pratap was establised. They displayed videos regarding the airforce, recruitment process, technologies and latest updates. The exhibition timings were 9 am to 5 pm and the venue is at food court near EAST KORE.

KOSMORENA'17

KCT SPACE WEEK 2017

Drawing event

Event was started at 12:00 noon .Welcome address was given by A.Hajirasulthana. Students have participated from various schools. And they were given topics on the spot by 12:10pm. The topic given to them was "Earth after 500 years". The judges were Muthuperiyal (Varnam club president) . They were judged based on their creativity and presentation of their drawings. After the event was over vote of thanks was given by A.Hajira sulthana.

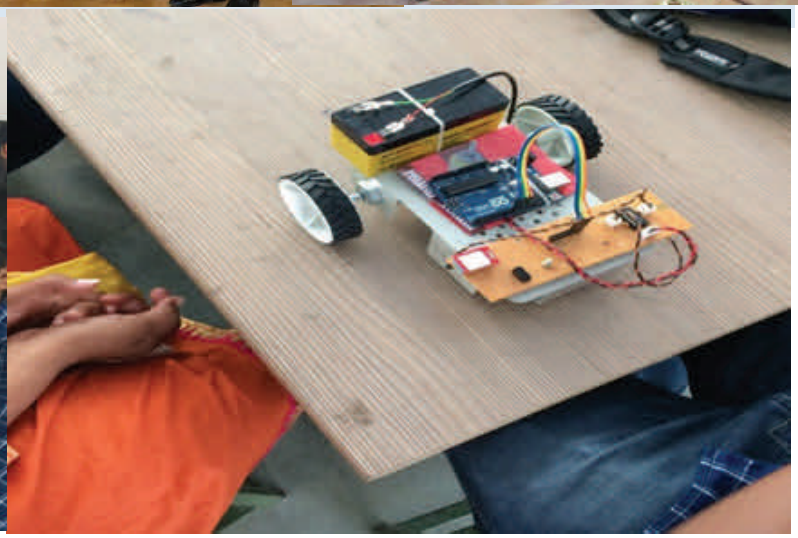
BIG IDEA CHALLENGE

A problem statement will be given and the participants as have to present their solutions to the judges.

Lunar rover workshop

The students were taught about the moon's environment on which a rover should survive. A small prototype of the rover is made and the students where allowed to an hands on experience on the prototype.

The valedictory was celebrated in the presence Administrative officer from SHAR Mr.P.SenthilSelvan and Indian Air force officers H.K.singh and Wing Commander Gauravpratap. The winners of the various events were awarded by the chief guests.



The Essence of Entrepreneurship and the opportunities in Aviation

Mr. R.Vishnuvardhan a technopreneur visited the department to deliver a lecture on Entrepreneurship. Speaker started with introduction about Entrepreneurship. Later explained its importance

in the field of Aviation. Explained job opportunities in core as well as software companies. His main emphasis were to Create a career that aligns with your values and Constant growth and development for an Technopreneur.

Guest Lecture on Aerodynamics, Wind Tunnel development & Testing

Mr. Mr. A N Subash,from Karunya Institute of Technology and Sciences Guest Lecture on Aerodynamics, Wind Tunnel development & Testing. Karunya is one such institute which has a good Aerodynamics lab infrastructure with supersonic wind tunnel and shock tubes. He delivered his insights on the supersonic wind tunnel model testing procedures and the challenges associated with it. Wind tunnel being the indispensable ones for the Aeronautical department, this lecture is a key event for the department. The speaker also touched up on the basic Aerodynamics part also

Industry expert talk

Mr Jaikumar Senior Engineer,Aero Thermal Lab Electrical and Aero Technology, GE discussed on the opportunities in the field of CFD and explained the concepts of CFD using live examples.

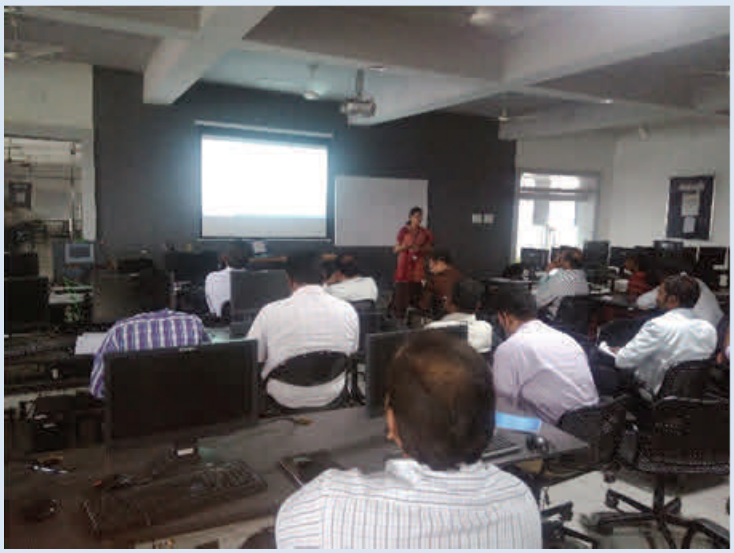
This session was mainly attended by the Dpeartment of Aeronautical and Automobile engineering faculty members. He started the session with the applications of Computational fluid dynamics and explained its present usage in the industries. Also he encouraged the departments to have more simulation based courses adding to the traditional theory and experimental courses.

Out reach program for school students on the occasion of children's day for Nov 2017

During the program, we are exhibiting and demonstrating various aero models with all the necessary equipment's as well as Humanoid Robot-NAO and mobile robot. The students from the government school were given the various information about aircarfts and shown a line of airacrft models. Even we have flown DJ phantom quadcopter to engage them. It was really an enjoyable and an informative session

Awareness of various aspects of R&D

A R&D workshop was conducted by Dr. S. Jayalakshmi and Dr. Arvind Singh to give greater awareness of various aspects of R&D to the faculty. The presentation and discussion was held on the following topics: interdisciplinary R&D, selection of research topic, key terms (citation, impact factor, h-index), thrust areas/funding agencies (e.g. DST, DRDO, DAE, CSIR), technical paper writing, presentation and patents.



The workshop was conducted in two sessions on 4 November 2017, at the EIE Lab. Faculty from mechanical engineering, mechatronics, aeronautical and civil engineering departments attended the workshop in the morning session. Faculty from biotechnology, textile technology and fashion technology attended the workshop in the morning session. About 30 faculty attended the workshop. The faculty found the workshop very useful and have given good feedback to the coordinators.

2 Days Employability Improvement Program on Elements of Commercial Airplane Aerodynamics

Mr. Azhagu vairamuthu who is an MIT alumnus and works at Jet airways as Technical Maintenance engineer accepted to give a one day guest lecture on "commercial airplane aerodynamics" to our third year students. The event was inaugurated by our beloved principal Dr.R.S.Kumar. Though the students had studied the aerodynamic course through regular classes, this guest lecture gave them a new perspective from the industry point.

The speaker has immense practical experience with aircrafts and his talk delivered knowledge that would help the students to be industry ready. It was a lucid effective talk which was well received by the students.

The main objective of this workshop to provide fundamental knowledge about aerodynamic design on airplanes.

The fundamental concepts of Aerodynamics on Commercial airplanes has been explained by Mr. A. Alagu Vairamuthu, Technical Services Engineer (Structures) , Jet Airways (India) Ltd, Mumbai, India

This workshop has been useful for final year students those who are interested to do their project as well as internship in maintenance and management on aeronautical field.

Guest lecture on Military Drone and Jet Engine of an Aircraft

Mr. Jayakrishnan N Commander in Indian Navy (Rtd) delivered a Guest lecture on Military Drone and Jet Engine of an Aircraft on 02nd March 2018 to the third and final year students. The commander worked on various aircraft engine and its testing procedures which he shared with the studenst., As the era of drone is on the rise, he started the session with the advent of drones in the near future . He elucidated the necessity and requirement of a military drones in the Indian defense. The session was a load of information dropped on to the student community.

Alumnus from IIT Madras

Opportunities for Higher studies in IIT's through Gate. This session was handled by Ms. Deepthi, passed out at 2012, currently perusing her M tech in IIT, Madras

The seminar is mainly focused on to create the awareness and opportunities for the students on GATE exam.

SHOCKWAVES IN SCIENCE ENGINEERING AND MEDICINE

SCIENCE ACADEMIES' LECTURE WORKSHOP

A two day Science Academies Lecture workshop on "Shock Waves in Science, Engineering and Medicine" was organized by the Department of Aeronautical Engineering at Kumaraguru College of Technology in Coimbatore on 06-07, October 2017. The Workshop was sponsored and supported by Indian Academy of Sciences, Bangalore, Indian National Science Academy, New Delhi and The National Academy of Sciences, Allahabad.

List of Resource Persons:

1. Prof. Gopalan Jagadeesh, Department of Aerospace Engineering, IISc, Bengaluru
2. Prof. E. Arunan, Department of Inorganic and Physical Chemistry, IISc, Bengaluru
3. Prof. K.P.J. Reddy, Department of Aerospace Engineering, IISc, Bengaluru
4. Prof. Dipshikha Chakravorty, Department of Microbiology and Cell Biology, IISc, Bengaluru

Additional Experts Invited for Demonstration/Case Study:

5. Prof. V. Jayaram, Department of Solid State and Structural Chemistry, IISc, Bengaluru
6. Dr. Dhanajaya I Bhat , Professor, Dept. of Neurosurgery, National Institute of Mental Health & Neuro Sciences (NIMHANS), Bengaluru
7. Dr. S. A. Britto Dhas, Professor, Dept. of Physics, Sacred Heart College, Vellore.

Inauguration

Lighting Traditional Lamp by the Dignitaries

Welcome Address by Dr. R.S. Kumar, Principal KCT

The formal inaugural function of the workshop was held in the KCT Seminar Hall between 9.00 am to 9.30 am on 06.10 2017. After formal invocation by KCT students, Dr. R. S. Kumar, Principal, KCT gave the welcome address. He also thanked the Academy of Sciences, All the invited guest speakers and Participants for joining the workshop. The inaugural address was given by Prof. K.P.J. Reddy, Department of Aerospace Engineering, IISc, Bengaluru. He explained the importance of Shock waves, Shock waves research activities in India and he expressed his desire that the participants of the workshop should come forward to initiate research activities on Shock Waves. Prof. E. Arunan , Convener of the workshop gave a brief note on the workshop and its expected objectives. it was presided by Dr. R. S. Kumar Principal KCT

The first lecture session was on Shock Waves: An Introduction by Prof. Gopalan Jagadeesh, Department of Aerospace Engineering, IISc, Bengaluru. He narrated how actually IISc was started with the contributions and efforts of Jameshedji Tata, Swami Vivekananda and His Excellency Nalvadi Krishna Raja Wadeyar, the king of erstwhile Mysore state in a very interesting manner. Participants were thrilled by the historical background of IISc. He then explained the fundamentals of Shock Waves (SW) in a simple way using well designed PPTs. A small demonstration given by him on SW using inflated balloon is worth mentioning here. He also explained the experimental methods of creating shock waves in a laboratory which could be easily understandable by the participants

In the second lecture, Prof. E. Arunan, Department of Inorganic and Physical Chemistry, IISc, Bengaluru discussed the fundamentals of Chemical Kinetics. The difference between kinetics and dynamics, rates of chemical reactions, earlier works of Louis Jacques on the decomposition of hydrogen peroxide, Arrhenius equation, degrees of freedom, vibrational, rotational and translational motions, Gibbs, free energy and many more fundamental things were covered in the talk.

Third lecture on Biological Applications of Shock Waves-I by Prof. Dipshikha Chakravorty, Department of Microbiology and Cell Biology, IISc, Bengaluru. After brief explanation of her work on Salmonella- a super bug for infectious diseases like typhoid, she described the early work of E. Mousler and F. Larrondo (in 1947), a rare combination of Physicist and Urologist, on treating brain cancer using SW. Participants came to know about the various possible applications of SW in medical field from this talk.

Prof. K.P.J. Reddy, Department of Aerospace Engineering, IISc, Bengaluru gave the sixth lecture on Making Shock Waves pay. He covered issues like artificial insemination of cows using SW and thereby improving the milk productivity, tea processing, rejuvenation of bore wells using SW, lithography to treat kidney stone and the role of SW in this treatment etc. He discussed how one can make money in all these things. The advantage of Reddy tube and its usage by ISRO and many other organizations was explained by him.

KUMARAGURU
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Department of Aeronautical Engineering

INSTITUTE VISION

The vision of the college is to become a technical university of International Standards through continuous improvement.

INSTITUTE MISSION

Kumaraguru College of Technology (KCT) is committed to providing quality Education and Training in Engineering and Technology to prepare students for life and work equipping them to contribute to the technological, economic and social development of India. The College pursues excellence in providing training to develop a sense of professional responsibility, social and cultural awareness and set students on the path to leadership.

DEPARTMENT VISION

To attain excellence and global reputation in Aeronautical Engineering Education and Research.

DEPARTMENT MISSION

M1: The department is committed to provide quality education in Aeronautical Engineering to students to build their career and do quality research and thus contribute to the field of Aviation and Aerospace.

M2: The department aims to prepare students for their higher studies and research to contribute to the advanced technological needs of Aeronautical engineering.

M3: To encourage faculty to update their knowledge and teaching-learning process through continuous learning.

M4: To undertake inter-disciplinary research to contribute and support the industry.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

The Program Educational Objectives (PEOs) of Aeronautical Engineering Undergraduate Program are to prepare the students:

I. To pursue a successful profession in leading organizations.

II. To pursue postgraduate degrees and conduct research at leading technological universities to contribute to the advancement in the field of Aviation and Aerospace industries.

III. Continue their professional development by utilizing educational and career building opportunities through their employer, educational institutions, or professional bodies.

PROGRAM OUTCOMES (POS)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: 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.

PO3: 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.

PO4: 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.

PO5: 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.

PO6: 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.

and systems.

PO7: 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.

PO8: Ethics: Apply ethical principles and commitment to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: 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.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and 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.

PO12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life -long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOS):

PSO1: Apply fundamental principles of Aerodynamics, Structures, Propulsion, Materials, and Avionics to provide solutions to aerospace and non-aerospace industrial problems.

PSO2: Use the software packages in the design, manufacturing, testing and maintenance of aeronautical and aerospace based components