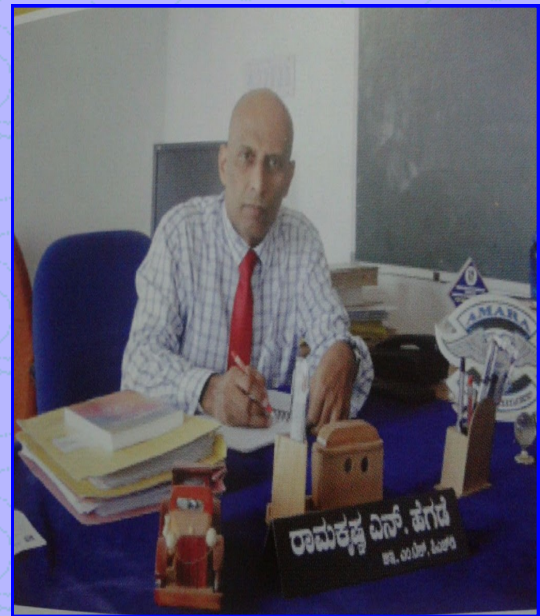




## H.O.D 'S MESSAGE

In continuation with our legacy to highlight the department level activities, I am happy to note that the second volume of the e-news letter is ready. The department of Aeronautical engineering started this semester with a one week Faculty Development Program, which was very successful, in terms of faculty participation and standards expected. During this period, as on date, students took active participation both in technical and cultural activities at inter, intra department and institution level. An exclusive workshop, 'for the students', 'by the students' was successfully conducted, of late. The number of students placed is also encouraging this semester. Highlight of the semester is - good academic performance in the previous semester VTU exams. It is high time for the final year students to focus seriously on project work and complete it well within the dead lines set, at the same time, publish their work in research journals of repute.



**Dr. Ramakrishna N Hegde**



## SRINIVAS INSTITUTE OF TECHNOLOGY

**Mangaluru - 574 143**  
 (A unit of A. Shama Rao Foundation, Mangaluru)

**The college is ranked 13<sup>th</sup> among all VTU affiliated Colleges for the year 2018.**

*Congratulations!*

The Management, Principal, Staff and Students wholeheartedly congratulate and appreciate the efforts of our Gold Medalists and Rank Holder students in the Visvesvaraya Technological University (VTU) June/July 2017 B.E. Examinations.

### GOLD MEDAL AND FIRST RANK



**Mr. Yathiraj**  
 B.E. in Marine Engineering



**Mr. Suhas P.**  
 B.E. in Nanotechnology

### RANK HOLDERS



**Mr. Kishore M. P.**  
 B.E. in Marine Engineering  
 2<sup>nd</sup> Rank



**Mr. Delmon John D'Mello**  
 B.E. in Marine Engineering  
 3<sup>rd</sup> Rank



**Ms. Maldren Joyce J**  
 B.E. in Aeronautical Engineering  
 5<sup>th</sup> Rank

Dr. Shrinivasa Mayya D.  
 Principal, SIF, Mangaluru

Dr. A. Srinivas Rao  
 Pro-Chancellor, Srinivas University  
 Vice President, A. Shama Rao Foundation, Mangaluru

CA A. RAGHAVENDRA RAO  
 Chancellor, Srinivas University  
 President, A. Shama Rao Foundation, Mangaluru

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**A Boeing 747 is  
made up of six  
million parts**

## When a lecture on the seashore gave Abdul Kalam his aim in life!

A brief class by his teacher on the Rameswaram seashore on how birds fly and the locomotive force behind their flight gave former President A P J Abdul Kalam his aim in life and helped him in understanding physics better.

This and several nuggets about Kalam's life besides advice for young people on careers in areas like robotics, aeronautics, neurosciences, pathology, palaeontology and material sciences find mention in a new book "Reignited: Scientific Pathways to a Brighter Future," co-authored by Kalam and his former scientific advisor Srijan Pal Singh.

Kalam says as a young boy, he used to love the stories of the pilots and their planes and was curious about planes. Also he wanted to be a pilot himself. "Back in my village there were few people who could discuss aircraft. I was a disadvantaged child from a non-educated family; yet I had the advantage of being in the company of great teachers. My curiosity was fulfilled by a very special teacher when I was a 10-year-old boy in class V. This was indeed a life-changing event," he writes.

He then goes on to describe one of the most important event of his life. "My science teacher's name was Sivasubramania Iyer. One day, the topic of discussion in our class of 65 was 'how birds fly'. He went to the blackboard and drew a sketch of a bird with a tail, wings and head and explained how a bird flew.

"The same day he took us to the Rameswaram seashore where we saw dozens of seabirds flying. My teacher said, 'Look how the birds are flapping their wings, now see how they change direction using their wings and tail. What is the locomotive force behind this flight - it is the life energy of the bird'."

The teacher told the students that the same principles make an aircraft fly and within an hour of the lesson, Kalam learnt how birds fly.

According to Kalam, that single lecture transformed his life and led him to make a profession out of his passion: rocket engineering and space flight.

"What I learnt that day was unique. My teacher gave me an aim in life. Later I realised how important it was to study physics. I chose physics. I opted for aeronautical engineering, and then became a rocket engineer. Then a space technologist."



### 1. Pilots eat a different meal

There are various rules which are imposed by different airlines. However, there is one rule which is common to the vast majority of them. It is the rule that pilots must be fed the same multi-course meal given to those in the first and business class whilst the co-pilots are encouraged to eat different entrees to guard against cases of food poisoning.

### 2. Only 5% of the world's population have ever been on an airplane

Though the aviation sector is growing rapidly, according to the statistics only 5% of the world's population has ever flown on an airplane. Many people, especially from the under-developed regions, have never even been in an aircraft and it is not likely that they will have an opportunity to fly in all of their lives. However, at the same time a small minority of the world's population fly very regularly.

### 3. More than 80% of the population is afraid of flying

Acrophobia is defined as a fear of heights. Unlike a specific phobia like aerophobia – fear of flying – and other specific phobias, acrophobia can cause a person to fear a variety of things related to being far from the ground.

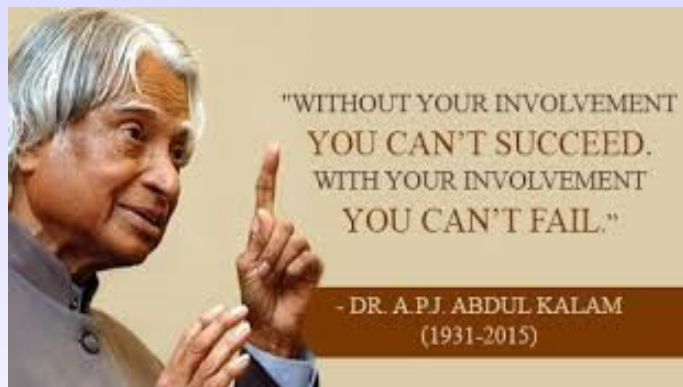
Kalam also mentions how as a child he used to wait with eagerness to read the newspaper filled with photographs of fighter aircraft and stories of Second World War.

He was in class V when he took up his first job as a newspaper boy. His elder brother used to lend him his bicycle. Kalam would pick up a bundle of Tamil newspapers from the station at 5 a.m. and begin his task of delivering them to some local offices, some tea stalls and occasional homes. But before he set out distributing the papers, he would spend time at the station itself.

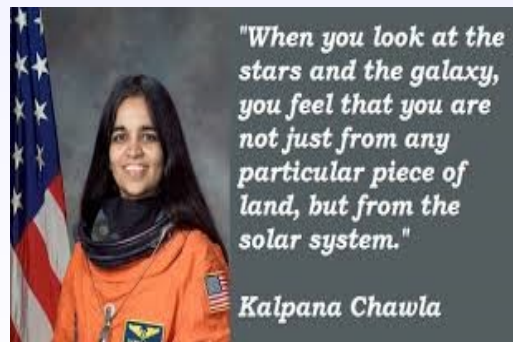
"I used to sit on the bench there and open the bundle and carefully pluck out a copy of the daily newspaper Dinamani. The first page always caught my attention: it was usually filled with photographs of fighter aircraft and stories of Second World War."

The stories would be about brave pilots from both the sides, and how they maneuvered their aircraft and bombers.

Published by Penguin Books, "Reignited: Scientific Pathways to a Brighter Future" explores the realm of science and technology, their extraordinary achievements and their impact on lives in the days to come.



Ms. Pooja M (4SN15AE025)  
Source: DNA



**"Success is most often achieved by those who don't know that failure is inevitable."  
-- Coco Chanel**

## Aircraft Re-Cycling

**A**viation industry has from being a pioneer has become a leader when it comes to long distant travel of transportation. In human innovations and inventions there are always advantages and dis-advantages, the current air traffic gives us a lots of information of how well and how important the airline industry is. On an average 8 million passengers travel through air every single day.

So this number quite gives us an assuming fact or the need of an airplane in this current world, this means building new commercial airline flights. Building an airplane is a tuff task and it is well handled by our engineers, it takes about 83 days for a Boeing 777 to be built from its first part, that is less than 3 months. A total of 1,538 no of Boeing 777's have been delivered (\* as of feb 2018\*).

This is just the number of 777's there are a still a lots of different models of airplanes available and has been and is being delivered by Boeing. We still have Airbus, Learjet etc.

A common commercial jet aircraft has a life expectancy of about 30,000 cycles (or) 60,000 hours as an average. In between these there might be some maintenance errors which would reduce its life, or some crash, etc. or some other reasons for a aircraft to be grounded either temporarily or permanently. If at all of these flights which are grounded are taken care off or left for dying.

There is a dump yard of used airplanes where all the aircrafts are dumped after its max number of cycles achieved, or some other reason to ground these flights. A place were retired airplanes are kept is known as a 'Aircraft Boneyard'.

There are a lots of aircraft boneyard on earth the largest one is at Davis-Monthan Air Force Base where more than 4,400 military and commercial aircrafts are being kept.

As I have mentioned above the need of airplanes are going become high rather than becoming less in number, there are quite a lots of ways to fill the needs of the future demands of airlines and passengers who prefer pleasurable bone-voyage.

- Increase the seed of production of aircrafts.
- Increase their life expectancy.
- Recycle used aircrafts. Etc. etc.



**"Things work out best for those who make the best of how things work out."  
- John Wooden**

**"Courage is grace under pressure." -- *Ernest Hemingway***

A Boeing 747-400 would cost me around \$148 million of money, airlines to a certain level are rich enough to get it delivered in a large scale. But considering the environment and the safety of the earth recycling used aircrafts.

Talking about Recycling Aircrafts, we have to think how to recycle them, because aircraft do transport a lots of people. and giving their life first priority we need to make sure that things don't go wrong when we are recycling an aircraft. For instance there are a lots of crash where negligible mistakes lead to a crash.

Firstly an aircraft will be separated based on the type or the reason for it been scrapped and later examining each and every part of the aircraft a list or the notable number of parts are noted down which can be reused or can be recycled. Such parts will be taken out then after proper analysis they will be recycled back to service. The rest will be decided similarly, the rest will be scrapped or kept for some more time if in case it can be recycled. Few cases the whole body of the aircraft is dismantled and then scrapped later melted down to aluminum or their respective materials so that they can be reused for different purposes they can either come back as another aircraft or same recycled materials can be made as raw material for some other major product.

Recycling in material has different types of wastes and different types of recycling parts in them which can be categorized and then recycled as per as there level of service or certification during the time of recycling. For example if I am recycling an aircraft that has hydraulics or a completely new fly by wire system then at that time the manager waste I produce or I recycle would be the electronics and the E waste. Is the quality of such a waste are good then considering it to recycle and use it in other aircrafts or melting them down for the raw materials is not a bad idea

For example parts like landing gas, the hydraulic valves, and the, seats the doors, the windows and few other parts which can be reused at a major level. So that the cost of them being built new would reduce.

Speaking about the safety because we are recycling parts that are not supposed to fly equality just will be analyzed and father will be 35 by AFRA hot some other non-profit organizations that come forward to recycle aircrafts. By doing this we save the environment to a certain level and at the same time save some money to.

Mr. Karthigayan T C  
Source: BBC

**"If you are not willing to risk the usual, you will have to settle for the ordinary."  
- *Jim Rohn***

## THE WORLD I WOULD LIKE TO GROW UP IN

**O**ne more year has been added to my life . While turning over the pages of my life , I wonder , if this is the world I want to grow up in !

As Malala said, I too come from a country which got independence at midnight . I can't think of a country which is against girls education and which targets children for achieving their goals . I love to live in a world devoid of terrorism. Our Constitution clearly mentions that every child has the right to education . Is that true? Even today we hear about child labour and may be , these children may be waiting for some Kailash Satyarti to come and rescue them.

Also we could hear the stories of sexual assaults against women and children . When a woman is alone , why do these people think that it is an opportunity for them ? Instead , why don't they think it is their responsibility to protect her? Ours is a country which gives much importance to relationships . But today in this technologically developing world , no one is bothered about relationships . Everyone is after money and pleasures . Ours is a country in which we workshop many Goddesses . We also say that children are another form of God . Please don't make them a scapegoat . I would like to grow up in a world in which both women and children are safe and secure .

My grandparents always advise me to be close to nature . Is our environment as good as that of their childhood days? Now a days if we want to breathe fresh air , we have to rise early in the morning when there will be no traffic

There are many factories which emit the same like Laloore and Vilappilsala in Kerala, I wonder how many waste dumping yards will be there in the world which are creating environmental and health hazards ! I too dream of living in a world in which land , water and air not polluted.

I am satisfied with today's education system

During the educational period of our grandparents , it was passion , not a burden like ours . Now a days children don't have time to play and even if they get time to play, they are in front of the electronic gadgets . They are not at all interested in doing any physical exercise .

Earlier there existed the joint family culture and that's why we could see the family bonding between people of that time . Because of this reason , they were able to bravely face any problem or challenge that came in their life . Due to lack of this family bonding, children of my age are unable to face the challenges of life and as a result we hear of the increase in number of suicides committed.

I would like to live in a world without corruption and hence I stand by people like Anna Hazare, Kiran Bedi etc. Just by cleaning our Surroundings and making it "Swatch" or "Normal" does not work out , the cleanliness must lie in the minds of people . Only social reformers can change the mindset of the people leading to universal harmony and brotherhood .

As Gandhiji said "You must be the change you want to see in the world " . So together let's begin the journey. Happy journey mates..

**Mr. K Rakesh (4SN15AE019)**

**"All our dreams can come true if we have the courage to pursue them."**

**- Walt Disney**

# ISRO's GSAT-6A

The Indian Space Research Organisation or ISRO launched its latest communication satellite - GSAT-6A on Thursday, March 29, 2018.

## What Is The GSAT-6A Satellite? And What Is Its Purpose?

The GSAT-6A is a high power S-band communication satellite. It will be India's second predominantly S-band communications satellite - first being the GSAT-6. It will complement GSAT-6, which has been orbiting Earth since August 2015 at 83 degrees East longitude. The purpose of the satellite is provide a platform for developing technologies such as demonstration of 6m S-Band 'Unfurlable Antenna', handheld ground terminals and network management techniques. These are useful in satellite-based mobile communication applications. The GSAT-6A launch will be ISRO's last launch for the financial year 2017-18. ISRO Chairman K Sivan has confirmed that the GSAT-6A launch would be followed by the launch of a navigation satellite which will be in the next fiscal.

## What Will Be The Lifespan Of The GSAT-6A Mission? And What Is The Cost Of The Project?

ISRO has stated that the life span of the GSAT-6A mission will be around 10 years. The cost of the 2-tonne satellite is approximately rupees 270 crores.

## What Is An 'Unfurlable Antenna'? What Does It Do?

ISRO's 'unfurlable antenna' is a six-meter-wide antenna which looks somewhat like an umbrella. This will be 'unfurled' once the GSAT-6A satellite has been put in orbit. This antenna, specially designed for the mission, is three times as broad as the antennas that are usually used by ISRO. This antenna will allow mobile communication from anywhere via hand-held ground terminals. Apart from communications, the GSAT-6A satellite is believed to be designated for military use as well.

## What Is S-Band? How Is It Useful?

S-band is an electromagnetic spectrum covering frequencies from 2 to 4 gigahertz (GHz). It crosses the conventional boundary between the Ultra High Frequency (UHF) and Super High Frequency (SHF) bands at 3.0 GHz. S-band is used by weather radars, surface ship radar, and some communications satellites. S-band is very useful because the 2.5 Ghz band is used globally for 4G services, and is worth billions of dollars. The S-band spectrum is extremely valuable for mobile broadband services.

## What Are Some Of The Salient Features Of The GSAT-6A Satellite?

It will help provide mobile communication for India through multi-beam coverage facility. It will have S-band in five spot beams and C-band in one beam. It will have a 6m diameter 'unfurlable antenna' for user communication link. It also has a 0.8m fixed antenna for hub communication link. The overall size of the GSAT-6A satellite is 1.53m X 1.65 m X 2.4 m.

*"No one can make you feel inferior without your consent." -- Eleanor Roosevelt*



### How Will The GSAT-6A Be Launched? Which Rocket Will Carry The Satellite?

The GSAT-6A communication satellite will be launched by ISRO's GSLV-F08 rocket. The GSLV-F08 will be the twelfth flight of Geosynchronous Satellite Launch Vehicle, and the sixth flight which will have an indigenous Cryogenic Stage. The launch of the GSLV-F08 rocket carrying the GSAT-6A will happen from the second launch pad at Sriharikota spaceport. The height of the rocket carrying the GSAT-6A is 49.1 metres and the weight is 415.6 tonnes.

### How Many Stages Will The GSAT-6A Launch Comprise Of?

The GSAT-6A launch will have three stages (Stage 1, 2, 3) and end with the 'payload fairing'. 'Stage One' will comprise of two propellants - Earth storable liquid propellants and Composite solid propellant. 'Stage Two' will comprise of Earth storable liquid propellants, while 'State Three' will have Cryogenic propellants.

### How Long Will It Take For The GSAT-6A Satellite To Be Put In Orbit?

The total time to put the GSAT-6A satellite in orbit since its blast off from the launch pad in Sriharikota will be 17 minutes and 46.50 seconds.

### What Are The Technological Details Of The GSAT-6A Launch?

The targeted Geosynchronous Transfer Orbit or GTO of the GSLV-F08 include a 'perigee' (point in the orbit of a satellite at which it is nearest to the earth) of 170 kilometres, an 'apogee' (point in the orbit of a satellite at which it is farthest from the earth) of 35,975 kilometres, an 'inclination' of 20.63 degrees, and an 'azimuth' of 108 degrees. The mission will include three orbit raising manoeuvres using the satellite's onboard propulsion system. The targeted orbit of the GSAT-6A is aimed at 36,000 kilometres. It will have a geostationary orbit at an inclination of zero degrees once in place over the 83 degree east longitude.

Understanding The GSLV or Geosynchronous Satellite Launch Vehicle Being Used For The GSAT-6A Mission  
The [Geosynchronous Satellite Launch Vehicle Mark II](#) (GSLV Mk II) is the largest launch vehicle developed by India, which is currently in operation. This fourth generation launch vehicle is a three stage vehicle with four liquid strap-ons. The indigenously developed cryogenic Upper Stage (CUS), which is flight proven, forms the third stage of GSLV Mk II. From January 2014, the vehicle has achieved four consecutive successes.



Ms. Indu Venkat (4SN15AE017)



## THE SATELLITE



GSAT-6A

## Salient Features

- Provides mobile communication for India through multi beam coverage facility
- S-band in five spot beams
- C-band in one beam
- 6m diameter Unfurlable Antenna for user communication link
- 0.8 m Fixed Antenna for hub communication link
- Overall size : 1.53m x 1.65m x 2.4m
- I-2K Spacecraft Bus
- Power : 3119 W

Image credit: isro.gov.in

## GSLV-F08 Flight Profile



Image credit: isro.gov.in

## THE VEHICLE

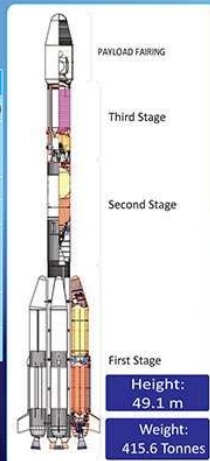
## GSLV-F08 at a Glance

Parameters	Stages			
	First Stage (GS1)	Second Stage (GS2)	Third Stage (GS3)	
	Strap-Ons (4 L40 H)	Core Stage (S139)		
Length (m)	19.74	21.25	11.57	8.47
Diameter (m)	2.1	2.8	2.8	2.8
Propellants	Earth Storable Liquid Propellants	Composite Solid Propellant	Earth Storable Liquid Propellants	Cryogenic Propellants
Propellant mass (T)	4 x 42.7	138.11	39.48	12.84
Max. Vacuum Thrust (kN)	4 x 759.4	4846.9	846.8	73.55

## Improvements in GSLV-F08

- Induction of High Thrust Vikas Engine (HTVE) in GS2
- Induction of electromechanical actuation (EMA) system in place of electro-hydraulic actuation (EHA) system in GS2

Image credit: isro.gov.in



## THE VEHICLE

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Image credit: isro.gov.in

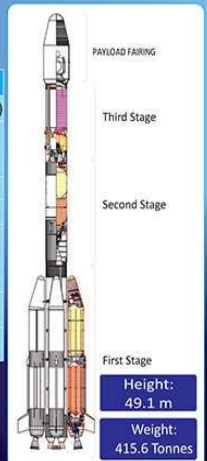
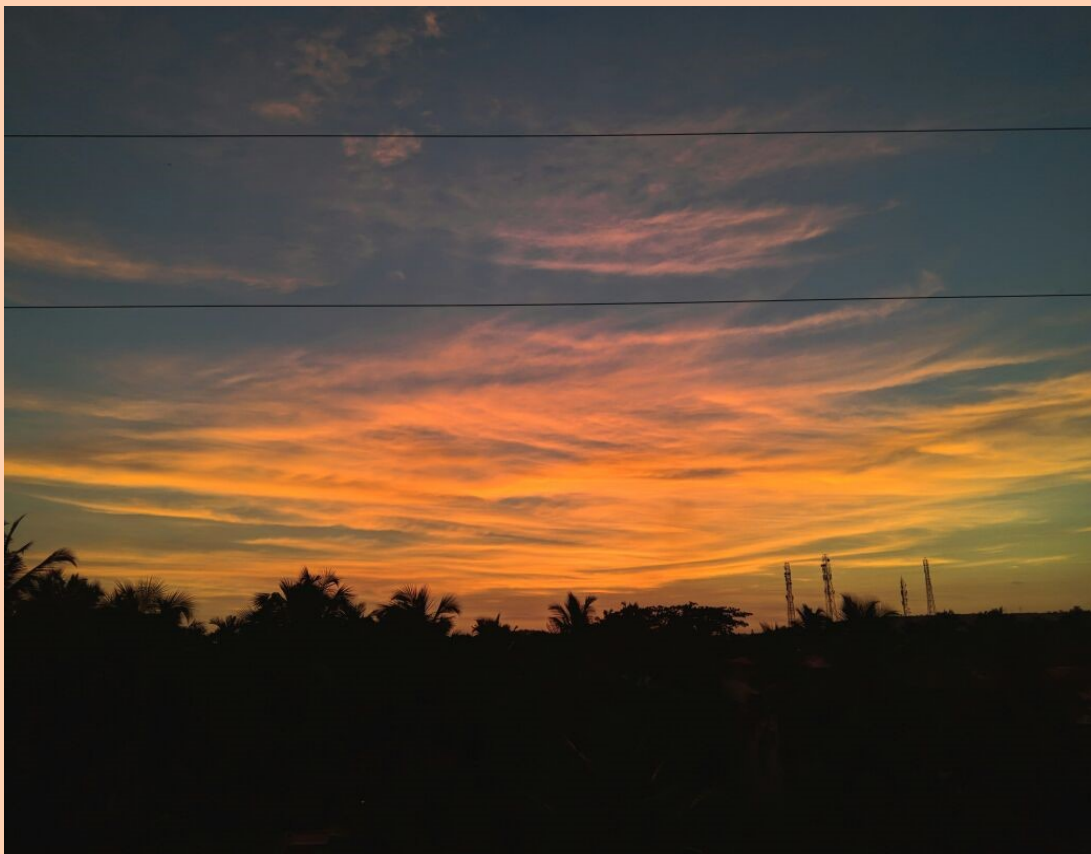


Image credit: isro.gov.in

**Prof. Deepak Raj P.Y**  
Source: NDTV

*"Success is walking from failure to failure with no loss of enthusiasm."*  
- Winston Churchill





*"The whole secret of a successful life is to find out what is one's destiny to do, and then do it."*  
-- Henry Ford



*"The longer I live, the more beautiful life becomes." -- Frank Lloyd Wright*



## One week Faculty Development Program on LabVIEW System Engineering Software Hands – on Training, LSET - 2018

The FDP was inaugurated by Dr. K V Gangadharan, Professor and former head, Department of Mechanical Engineering, NITK, Surathkal and the function was presided by Dr. Shrinivasa Mayya D, Principal SIT, Mangaluru along with Dr. Ramakrishna N Hegde, Head of the department of Aeronautical engineering, SIT, Mangaluru.

The workshop was kick started in the next session by Dr. K V Gangadharan and Prof. Praveen Shenoy by explaining the LabVIEW software and its application in the cantilever beams of hardware interface. Afternoon session was engaged by Mr. Rithesh and Mr. Salman, the training institute, Technologies Global Pvt Ltd on the basics and how to start labview software.

17th January 2018, solved 7 to 8 problems or assignments on Boolean expressions and logic gates. The sessions were engaged by the training institute.

18th January 2018, hands on training of application of labview software on Hardware interfaces like SIMCOM, data acquisition DAQ system, RFID and power supply.

19th January 2018, visited Centre for System Design, SOLVE lab, NITK, Surathkal. Dr. K V Gangadharan and his team of research scholars explained about experiments on strength of materials, fluid mechanics, civil structures, project on the drones and its mapping of wild regions, live streaming of torsion test using labview and image processing.

The final day, 20th January 2018, Prof. Meghashyam Raju, Assistant Professor, Aeronautical engineering department, SIT, Mangaluru, gave a technical talk on LabVIEW application and its comparison with other platform. Prof. Ramesh Kumar, Professor, Aeronautical engineering department, SIT, Mangaluru, shared his immense industrial knowledge on virtual imaging in aeronautical and aircraft industries. Dr. Ramakrishna N. Hegde, HOD of Aeronautical and Automobile Engineering SIT, Mangaluru, in his valedictory address to the participants briefed about need for week long FDP and its benefit. He also advised the participants, to share the knowledge gained through this hands on FDP amongst student and research community, in addition to self development.

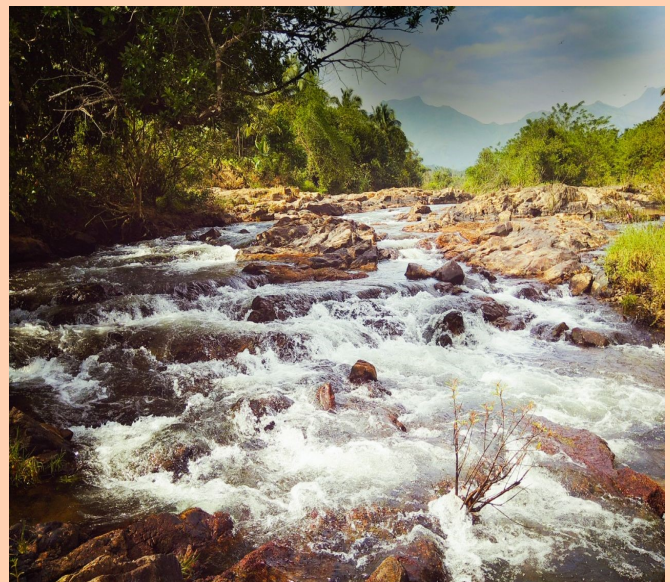


**"Opportunities don't happen. You create them." -- Chris Grosser**



## Voters Pledge

As per the directions received from VTU on behalf of Election Commission of India, on account of 'National Voters Day', voters pledge was administered to the Faculty and Students of Aeronautical and Automobile Department, by the Department Head, Dr Ramakrishna Hegde, on 25/1/2018 at 11.00 am, in the department premises. All Students and Faculty, participated and took the Pledge.



Mr. Sharan Prakash  
(4SN15AE035)

# Envision 2018

**DEPARTMENT OF AERONAUTICAL ENGINEERING CONDUCTED 4 EVENTS FOR ENVISION-2018 UNDER THE BANNER OF SRINIVAS AERO CLUB.**

**THE EVENTS WERE :**



**PAPER PRESENTATION**



**GLIDER**

**Every positive thought is a silent prayer which will change your life**



# Envision 2018



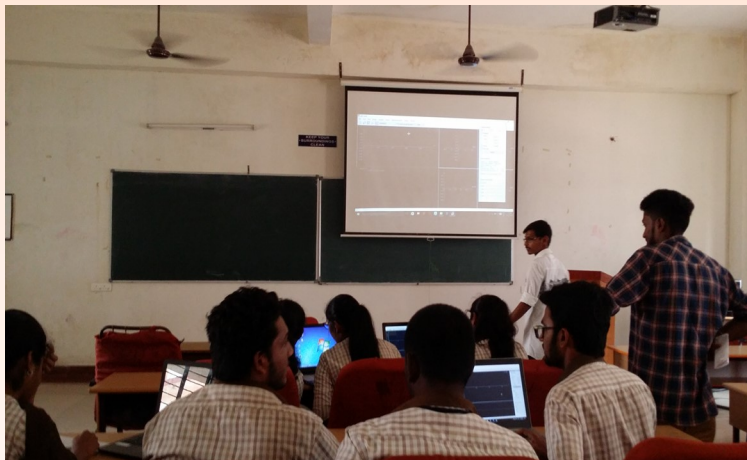
Water rocket



Patagium

The action is the foundational key to success

## One day workshop on Airfoil analysis using XFOIL and XFLR software



Students of VIII semester Aeronautical Engineering, Mr. Naveen D M, Mr. Karthik Borkar, Mr. Chandan A Y and Mr. Navaneesh N Amin, in association with Srinivas Aero Club, Department of Aeronautical Engineering conducted one day workshop on Airfoil analysis using XFOIL and XFLR software on 26/03/2018 to the students of IV, VI and VIII semester in three batches. The whole event was coordinated by Prof. Deepak Raj, coordinator of SAC and AMARA.

*"I have not failed. I've just found 10,000 ways that won't work." -- Thomas Edison*



It is in your moments of decision that your destiny is shaped.

## PLACEMENTS



**Pavan Badiger**  
Shriram Transport And Finance Company



**Shruthi N**  
Karyy India Pvt.ltd

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##### 2nd YEAR

ANJANAYA

VENKATESH A R

JEET

HARSHITHA R

If you want to conquer fear, don't sit home and think about it. Go out and get busy.