SRINIVAS GROUP
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AkShipth

SRINIVAS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF AERONAUTICAL ENGINEERING

September 2018

VOLUME 3 ISSUE 1

H.O.D.'s Message:

I am pleased to see the third volume of Akshipth, the e-news letter of Department of Aeronautical Engineering, rolling out on time. The effort of students and faculty is laudable in bringing out unique features of the latest happenings in the aeronautical and aerospace field. The departmental activities for the current academic year have already taken off and in the right direction. As a continued endeavourer to upgrade the skill set , an exclusive student workshop is in the pipeline after the first internals.

With the inauguration of AMARA association, it is the right time for the students to plan for outreach and extension activities, to create an awareness in the society, on burning issues. Not to forget 'Swachha Abhiyaan' which has to be continued as a routine.

The department lower semester results are not as expected and with the first internals on the corner , I advice the students to engage in studies and perform well.

It is a welcoming development that the number of students taking up GATE examination has increased. To hone their skill further, the department has already started orienting the students with short burst of GATE coaching.

With the placement drive is shortly to begin , all the final year students need to seize the first opportunity , giving no scope for any choice and stubbornness. I wish them all the best.

I thank the editorial team for their wonderful work.

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Department of Aeronautical Engineering
Srinivas Institute of Technology Mangaluru

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Glance the Trending!!!

NASA's Parker Solar Probe will be the closest man-made object to the Sun, launched on August 12 2018. The rocket used for the launch was the fastest rocket ever built at 430,000 miles per hour.

ISRO's Chandrayaan 2 launch date rescheduled to January 3 2019. India's second lunar mission comprises of an orbiter, a lander and a rover.

Reliance Jio partners with ISRO to use ISRO's satellites to provide 4G service in rural, remote locations of India.

ISRO is planning to send manned rocket to space by 2022 at a cost less than 10,000 Cr. The rocket to be used for this mission will be GSLV-MK III. It will take astronauts to space within 16 minutes of launch at an altitude of 300-400 km. Astronauts are scheduled to stay in space for 7 days.

Dassault Rafale, a French fighter jet is among the Top 5 fighter jets around the world as of 2018. India has ordered 36 such jets costing around 91 million Euros per aircraft. Delivery is estimated to start by 2019.

What's Inside:

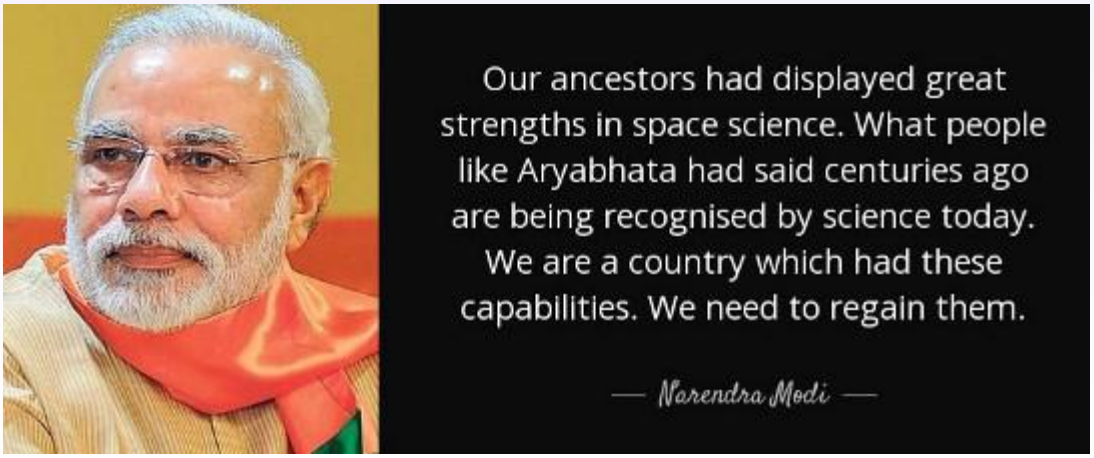
Only 536 people have ever been to space out of which only 12 walked on moon!

Facts and Myths...

Sun is not yellow in color as seen from earth. Sun actually emits multiple frequencies of radiation and hence is white in color as viewed from International Space Station.

One of the longstanding mysteries of air travel involves how the autopilot works. "Many people are under the impression that airplanes are actually flown via autopilot," but that's simply not the case. The autopilot is essentially a very advanced form of GPS, providing input and support regarding direction and position, but there's always a human in control of the airplane.

There is no such thing as Zero Gravity in space! Even though Astronauts float in space there is influence of earth's gravity called Microgravity! You cannot get rid of microgravity anywhere in the space, because one star or another will be imposing its effect wherever you go!



"I would like to die on Mars. Just not on impact."

-- Elon Musk

Boeing's Starliner and SpaceX's Crew Dragon Prepare to Visit the International Space Station

Two possible successors to NASA's space shuttle are scheduled to visit the international space station in August, in their last big step before they transport humans. A successful flight test for Boeing's CST-100 starliner and SpaceX's crew dragon spacecraft would show that these vehicles are finally ready to carry both NASA astronauts and space tourists into orbits.

Much is riding on these flight tests as NASA seeks to renew U.S capability for crewed spacecraft. Back in 2014, Boeing and SpaceX received NASA contracts worth a combined US $6.8 billion, to transport astronauts to space station. But both companies have repeatedly pushed back their original launch dates.
NASA and Boeing officials have suggested that the first crewed flights of the commercials spacecraft may not happen until 2019 at the earliest- and that's only if both spacecraft perform smoothly during their upcoming tests.
"Commercial crew is the only game in town for launching American astronauts to the International

space station from American soil on American launch systems," says Marcia Smith, founder of Virginia based space and technology. Policy group, a news and analysis organization said "if the United States wants to stop using Russian vehicles, NASA will have to make commercial crew work, whatever the cost and whatever the schedule turns out to be". Boeing has named its first flight demonstration orbital flight test; SpaceX has named its first effort Demo -1 flight test. Both test tests share the same goals: show that the spacecraft can launch into orbit, perform automated docking with the space station, and land safely back on earth.

These dry runs, without any astronauts abroad, also aim to support the companies claims that their spacecraft can function automatically. We will be providing the every system that does not interact with human operates as intended on the orbital flight test." says Rebecca, a Boeing representative.
In future, crewed missions, the Boeing starliner and SpaceX crew dragon will let astronauts on board and mission controllers on the ground take over during key phases of flight. Starliner, in particular, allows for manual control after the spacecraft separates from its rocket in orbit and prior to when it deploys its parachute upon the return of earth.

Boeing's starliner will hitch a ride into space abroad a United Launch Alliance V rocket, which has received nearly 80 successful launches since 2002. SpaceX's crew dragon will fly abroad the block 5, the latest version of the company's Falcon 9 rocket, which has launched about 60 times in different forms since 2010.

Each spacecrafts accommodates upto 7 passengers, who will wear temperature-controlled suits-blue for Boeing and black and white for SpaceX-designed to withstand a sudden loss of pressure or a fire in d crew module. Flight controls on both vehicles consist of touch screens and tablets instead of switches, dials, and proper flight logs from the early days of spaceflight.

Though built for identical missions, the spacecraft and their operations differ in certain design details. For example, crew dragon has three windows as opposed to starliner's two windows.

Each vessel also has an abort system to carry astronauts to safety during emergencies that occur while the spacecrafts waits on the launch pads or as it rockets into space .to make sure that systems operate as intended, SpaceX is planning an in-flight test of its abort technology, whereas Boeing will conduct an abort test from the pad (SpaceX completed a version of this test in 2015)

The return to earth will also look different for starliner and crew dragon. Both vehicles will rely on tried-and-true parachute approach to slow their descent after reentry through the Earth's atmosphere. But Starliner aims to land on solid ground with the help of an airbag system to cushion the shock, while Crew Dragon will cool its heels with a water landing in the ocean.

-Megha Ram
3rd Year (AE)

What is God particle?

The "God particle" is the nickname of a subatomic particle called the Higgs boson. In layman's terms, different subatomic particles are responsible for giving matter different properties. One of the most mysterious and important properties is mass. Some particles, like protons and neutrons, have mass. Others, like photons, do not. The Higgs boson, or "God particle," is believed to be the particle which gives mass to matter. The "God particle" nickname grew out of the long, drawn-out struggles of physicists to find this elusive piece of the cosmic puzzle. What follows is a very brief, very simplified explanation of how the Higgs boson fits into modern physics, and how science is attempting to study it.

The "standard model" of particle physics is a system that attempts to describe the forces, components, and reactions of the basic particles that make up matter. It not only deals with atoms and their components, but the pieces that compose some subatomic particles. This model does have some major gaps, including gravity, and some experimental contradictions. The standard model is still a very good method of understanding particle physics, and it continues to improve. The model predicts that there are certain elementary particles even smaller than protons and neutrons. As of the date of this writing, the only particle predicted by the model which has not been experimentally verified is the "Higgs boson," jokingly referred to as the "God particle."

Each of the subatomic particles contributes to the forces that cause all matter interactions. One of the most important, but least understood, aspects of matter is mass. Science is not entirely sure why some particles seem mass-less, like photons, and others are "massive." The standard model predicts that there is an elementary particle, the Higgs boson, which would produce the effect of mass. Confirmation of the Higgs boson would be a major milestone in our understanding of physics.

The "God particle" nickname actually arose when the book The God Particle: If the Universe Is the Answer, What Is the Question? by Leon Lederman was published. Since then, it's taken on a life of its own, in part because of the monumental questions about matter that the God particle might be able to answer. The man who first proposed the Higgs boson's existence, Peter Higgs, isn't all that amused by the nickname "God particle," as he's an avowed atheist. All the same, there isn't really any religious intention behind the nickname.

Currently, efforts are under way to confirm the Higgs boson using the Large Hadron Collider, a particle accelerator in Switzerland, which should be able to confirm or refute the existence of the God particle. As with any scientific discovery, God's amazing creation becomes more and more impressive as we learn more about it. Either result—that the Higgs boson exists, or does not exist—represents a step forward in human knowledge and another step forward in our appreciation of God's awe-inspiring universe. Whether or not there is a "God particle," we know this about Christ: "For by him all things were created: things in heaven and on earth, visible and invisible . . . all things were created by him and for him"

- Jyothsna
2nd Year (AE)

Twin Engine Propulsion System

Performance matching of twin engine system:
"Twin engine propulsion system is a viable option to be implemented on future long range (>5000 km) civil aircraft", the replacement of 4 engine to twin engine is not possible for Boeing 747. But the performance can be improved with four engine itself.

BOEING 747-100
The first Boeing 747 to be produced was the 100 series and it remained in production from 1969 to 1978.

BOEING 747-200
The original Series 100 remained in production from 1969 to 1978. However, almost immediately after the introduction of the 747, Boeing announced plans for a higher-weight variant known as the 200B. Higher aircraft takeoff weights allow the transport of more payload (revenue-generating passengers or freight) or more fuel (longer range). The Series 200 is visually identical to the Series 100, but a strengthened structure and landing gear allowed an increase in maximum takeoff weight from 710,000 to 785,000 pounds. This substantial increase in maximum takeoff weight was made possible by equipping the Series 200 with newer and significantly more powerful engines. One visual clue to the Series 200 is the increase in upper deck windows from 3 to 10, but this should not be considered definitive. Although almost all Series 200 aircraft had an internally larger upper deck from the Series 100, the additional windows were entirely at the discretion of the purchasing airline, and many Series 200 aircraft were ordered with the trio of upper deck windows.

BOEING 747-400
The Boeing 747-400 delivers more range, better fuel economy, lower noise and lower operating costs than the previous 747 models. The 747-400 has a range of approximately 8,349 miles (13,450 kilometers) and the lowest per-seat cost of any twin-aisle airliner in service today. The Series 400 also set new standards for reliability meeting 99% of its scheduled flights. Boeing delivered the first 747-400 in 1989 to Northwest Airlines. Since the first 747 delivery in 1969, Boeing delivered nearly 1,300 747s, of which 555 are high- technology 747-400s. As of December 2001, nearly 40 customers ordered 630 747-400s, making it the most popular wide-body airplane in history. The 747's longevity and popularity are based on its unbeatable low seat-mile costs, flexibility, long-range dominance, unmatched comfort options and ability to integrate new technology.

Replacement of four engine to twin engine of a Boeing 747, it depends on weight, airspeed and how you define maneuverable. If maneuvers include climbs then at least two engine are required. Maneuvering in other axis (Pitch, roll, yaw.) and airspeed change can be done with all engines out. Safe landing can be performed with all engines out as well assuming there is a suitable landing field within gliding range. For the safety point of view Boeing 747 need to have 4 engines.

Aviation industry professional involved with multi engine maintenance, including trained maintenance personnel and operators planning department work together to avoid maintenance error.

Ms. Pavana K. (Asst. Prof.)

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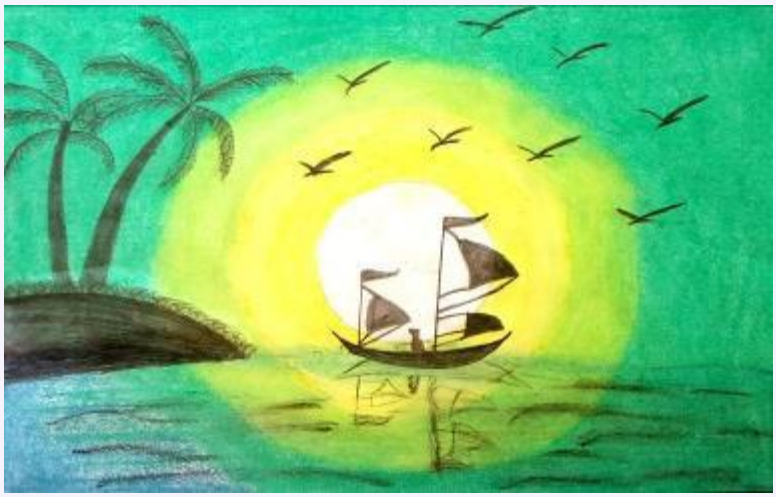
Creative Crayons



- Chaithra
3rd Year (AE)

- Prasanna
3rd Year (AE)

Remembering Dr. Kalam

3rd Memorial Anniversary of Dr. APJ Abdul Kalam was held on July 27, 2018 in order to remember his great deeds and contributions to the nation. An ethical oath was also taken by the students of Aeronautical Engineering "to follow honest path in the profession" keeping Dr. Kalam as an inspiration.

Knowledge Art

A collage competition was organized for 3rd Year Aeronautical Engineering students on "Create an art on History of Flight"

Warm Welcome to the First year students!

Students of Aeronautical engineering demonstrating the importance of team work and interaction activities with the first year students during the induction program

"Science is organised knowledge. Wisdom is organised life."

Teacher's Day

The one day of a year dedicated to our honorable teachers by the great philosopher , statesman , teacher and the ex president of India , Dr Radhakrishnan, was celebrated on September 5 2018 as a gratitude to their priceless work.

AMARA Inauguration

"Time is short, science is infinite."

Technical Talk

Honorable chief guest Former Mission Director of ISRO Mr. Sundaramurthy T. K. after the inaugural function of AMARA ,gave a technical talk to the students of Aeronautical and Automobile Engineering.



Engineer's Day

The day to remember Sir Vishveshwareya, the role model of all the engineers in our country and all around the world.



A^2 Quiz Competition

Quiz competition held by AMARA on behalf of Engineer's day for Aeronautical and Automobile engineering students.



Student's Achievements

VIII semester merit students for the year 2017-18

Monisha
I topper (610)

Sowmya
II topper (587)

"Life is too short for long time grudges."

AMARA

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PARTH HEGDE (AU)

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