

TEAM GARUD



INFORMATION BROCHURE

About UPES

University of Petroleum and Energy Studies (UPES) was established in the year 2003 through UPES Act, 2003 of the State Legislature of Uttarakhand. It provides domain specialized programs in Aerospace, Oil and Gas, Transportation, Power, Computer science, Information Technology, International Business, Logistics and Supply chain, Infrastructure, Public Policy, Design and Legal Studies. UPES is the only Asian University to receive the World Oil Award, National Green Building Rating System (GRIHA) in India. Recently it became the first Indian University to receive QS 5 Star Global Rating for Employability and Facilities. It became a part of the Laureate International Universities network in 2013. UPES is an endeavour of Hydrocarbons Education and Research Society (HERS), a non-profit organization registered under the Societies Act 1860 dedicated to promoting education and training in Energy and allied Sectors.

Department of Aerospace

The department of Aerospace Engineering was developed in July 2006 with a target to create industry ready professionals by training students in subjects involving design, analysis and manufacturing of Aircraft and Aerospace vehicles. Some achievements of this department in recent years are as mentioned below.



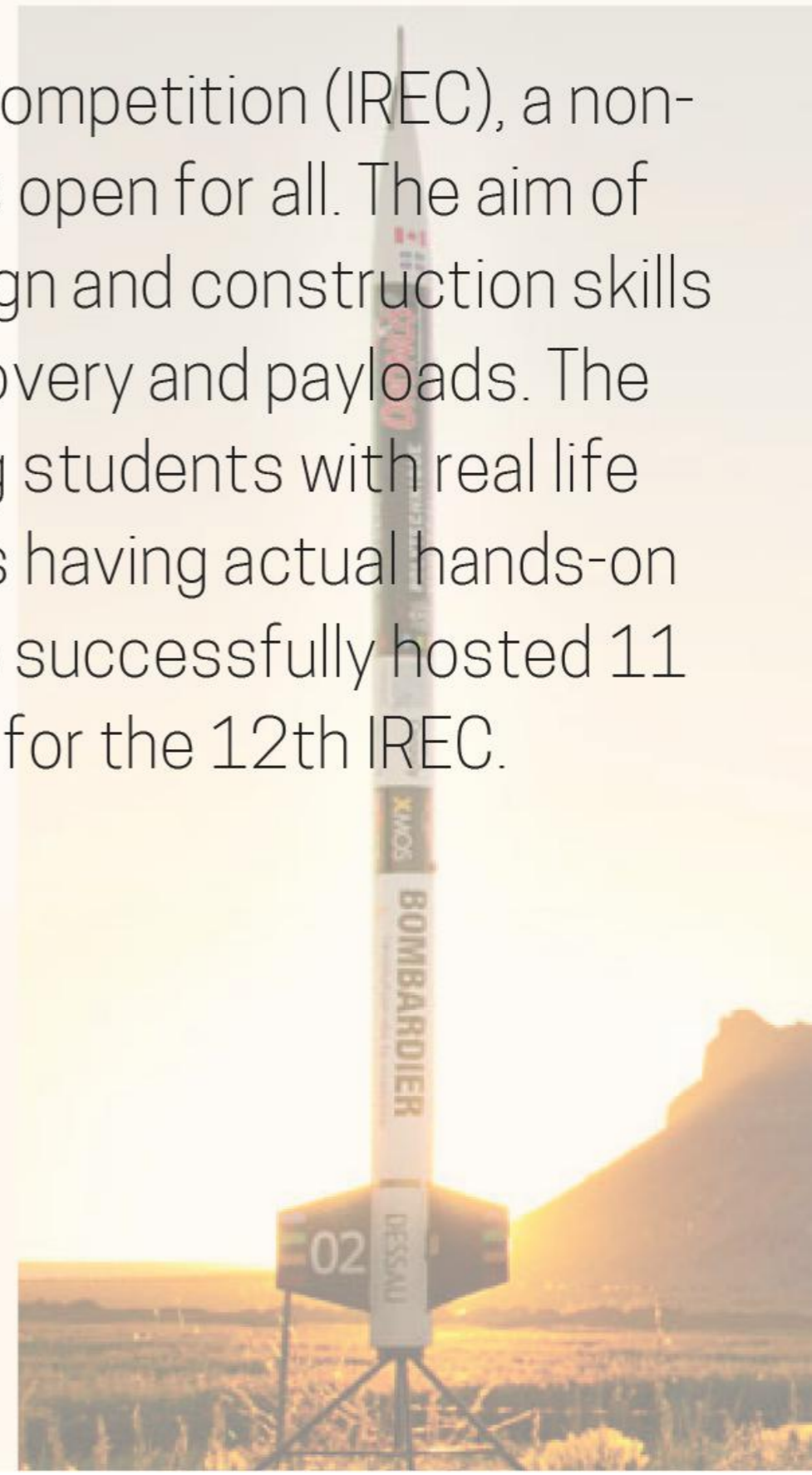
- NASA System Engineering Award (2012, USA)
- Paper presentation at Global Space Exploration Conference 2012, MIT, USA
- Testing of UPESSAT to gain data off upper atmospheric conditions.
- 9th position out of 75 teams SAE Aero Design West Competition 2012, Van Nuys USA.
- 4th position in CANSAT 2016, Burkett, Texas, USA
- Lockheed Martin Roll On/Roll Off University Challenge Winners
- Singapore Space Challenge 2016- Unmanned Aerial Systems (Merit Award Winners)
- Paper Presentation at International Astronautical Conference (IAC), Guadalajara, Mexico

ESRA

IREC

EXPERIMENTAL SOUNDING ROCKET ASSOCIATION is a non-profit organization founded in 2003 in Logan, Utah, as an outgrowth of the “Unity IV” student hybrid rocket program for the purpose of fostering and promoting engineering knowledge and experience in the field of rocketry. ESRA's focus is in the field of experimental sounding rocketry, which gives the opportunities to students having “Rocket Fever” to build and launch sounding rockets and explore the world of rocket-technology.

ESRA hosts an Intercollegiate Rocket Engineering Competition (IREC), a non-profitable rocket engineering competition which is open for all. The aim of ESRA rocket competition is to develop student design and construction skills in the field of propulsion, structures, avionics, recovery and payloads. The intention is to provide under-graduate engineering students with real life engineering challenges where they find themselves having actual hands-on experience of working on a given mission. ESRA has successfully hosted 11 intercollegiate competitions and is preparing for the 12th IREC.



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TEAM

GARUD

Formed under the guidance of Dr. Ugur Guven in 2014 and mentored by Dr. Gurunadh Velidi, Team Garud officially represents University of Petroleum and Energy Studies (www.upes.ac.in), Dehradun. The project is divided into various domains of Engineering like Aerospace, Electronics, Mechanical, and Computer Science. The Team sets up the mission statements per challenges provided by the competition guidelines and fabricates the rocket and payload to comply with requirements and participate in the competition. In 2015, the team received the No Nose Cone Award for the innovative design of their deployment system. Team Garud has been a part of 'World's Largest Rocket Building Competition' for the past 3 years. The members of Team Garud have geared up for this year's challenge with some innovative and interesting ideas, aiming to put INDIA and University of Petroleum and Energy Studies on the international stage and leave a mark in Spaceport America, New Mexico, USA.



THE TEAM



Dr. Ugur Guven
Vice-President, International Affairs
Department of Aerospace



Dr. Gurunadh Velidi
Assistant Professor
Department of Aerospace



TEAM GARUD

PROJECT

KALAM

Team Garud, the rocketry division of the University of Petroleum and Energy Studies, is an inclusive environment that embraces change, new ideas, respect for the individual and equal opportunity to succeed. We relentlessly pursue excellence in everything we do, every day exhibiting the strong will to win so we all are geared up for the 12th Inter-collegiate Rocket Engineering Competition (IREC) which focuses on student designing and technical skills in the field of mechanics, aerodynamics, avionics and recovery systems.

Team Garud's project for this year's competition is named as 'Kalam' to pay tribute to the Missile Man of India, Dr. A.P.J Abdul Kalam. Called as the 'Missile Man' as respect, he was no less than a missile. His achievement and success carried India to a height in the space research and development. Dr. Kalam also directed two revolutionary projects – Project Devil and Project Valiant. The work on these missiles led to the successful development of the Prithvi and Agni missile. Dr. Kalam's work gained a lot of respect and admiration, he well deserved the title of the 'Missile Man' of the country and he lives on in our memories as the greatest inspiration and a true visionary, hence, to continue this legacy in the field of Rocket Science, Team Garud is all set to forge 'Kalam', a sounding rocket, designed to make a sub-orbital flight upto 10,000 ft (AGL) and perform scientific experiments during the same. Spaceport America Cup (SAC) has collaborated for this mission with Experimental Sounding Rocket Association (ESRA) which seeks to further the field of experimental sounding rocketry to conduct the 12th Inter-collegiate Rocket Engineering Competition (IREC) 2017, which is to be held in Spaceport America, New Mexico.

MISSION OBJECTIVE



The Spaceport America Cup (SAC) has collaborated with Experimenting Sounding Rocket Association (ESRA) and is going to conduct the 12th Intercollegiate Rocket Engineering Competition (IREC) 2017 as its flagship event, which is to be held in Spaceport America, New Mexico.

Our team is going to compete in the 'Basic' Category of this International competition with the renowned universities from around the globe. The teams are required to display a comprehensive knowledge of mechanics, avionics and aerodynamics as well as project management skills.

The objective of the 'Basic Category' is to send the rocket to 10,000 ft. AGL and recover it safely using an automated deployment system, along with the payload of the main competitions.

SDL is excited to be involved with the Spaceport America Cup (SA Cup) and the Intercollegiate Rocket Engineering Competition (IREC), focusing on the payload portion of the competition. SDL is offering \$1,000 in cash prizes to teams that produce meaningful payloads.



BUDGET OVERVIEW

The project budget report is solely authored by "Team Garud". The report is up-to-date with current statistics on material availability and their respective price in the market. The total expense of the team and individual member is clearly stated in tabular form below which includes

- The money deposited initially by the team members.
- Essential materials required for the construction of the Rocket & its sub-sections.
- Accommodation charges of individual person (Team members travelling to USA).
- Additional charges.

TOTAL EXPENSE OF THE TEAM

Cost Factor	Price (in USD)	Price (in INR)
Entry Fees	200	14,000
Rocket Fees	500	35,000
Rocketeer Fees	900	63,000
Solid Rocket Motor	2000	1,40,000
Avionics	900	63,000
Payload Device	1350	94,500
Recovery	1800	1,26,000
Materials & Composites	3000	2,10,000
Rocket Fabrication	2000	1,40,000
Rocket Shipping	2900	2,03,000
Rocket Assembly/Testing [4-Day Workshop]	1600	1,12,000
TOTAL	17,150	12,00,500

*Miscellaneous Local Expense

-TRANSPORTATION CHARGES




-PURCHASE OF REDUNDANT MATERIALS

-TSA

All the things written here are accurate to the detail. Amendments required in the terms & conditions can be changed at any time without prior intimation.

DISCLAIMER: Any issues and matters arising here under shall be constructed in accordance with and be governed by the Team Garud's 'Team Faculty Advisor' or 'Team Leader'.

SPONSOR PACKAGES

BENEFITS	 BRONZE SPONSOR	 SILVER SPONSOR	 GOLD SPONSOR	 PLATINUM SPONSOR
%age Contribution	10%	15%	20%	30%
Company Profile on Website	✓	✓	✓	✓
Logo on Presentations & Media Channels	- ✓	✓ ✓	✓ ✓	✓ ✓
Name & Logo on:				
Exhibition Desk	✓	✓	✓	✓
Banner (Size)	✓ (Small)	✓ (Medium)	✓ (Large)	✓ (Large)
Team Merchandize	-	✓	✓	✓
Shirt (Size)	✓ (Name Only)	✓ (Small)	✓ (Medium)	✓ (Medium)
Tent	-	✓	✓	✓
Rocket (Size)	-	✓ (Small)	✓ (Medium)	✓ (Large)
Publicity during IGNITE(if requested)	✓	✓	✓	✓
Amount	₹1,20,000	₹1,80,000	₹2,40,000	₹3,60,000

MERCHANDISE VISIBILITY



ROCKET VISIBILITY





ADDED BENEFITS

- Inclusion in all media releases and other media contacts.
- Banner and pull-through ads on the event website.
- Sponsor's insignia on team's T-shirts and laptops.
- Letter of appreciation provided by the University.
- Publicity during the technical fest 'IGNITE' on the company's request.
- Pre-event and Post-event publication mentioning company's contribution in magazines, newspapers and websites.

Through our eyes, the universe is perceiving itself,
Through our ears the universe listening to its harmonies,
We are the witness through which the universe
becomes conscious, of its glory,
of its magnificence

TEAM GARUD

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