



RV College of Engineering®

Autonomous
Institution Affiliated
to Visvesvaraya
Technological
University, Belagavi

Approved by AICTE,
New Delhi, Accredited
by NAAC, Bengaluru



**Department of Aerospace
Engineering
R V Vidyaniketan Post,
Mysuru Road
Bangalore-560 059**





Rashtriya Sikshana Samithi Trust

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Principal

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Rashtriya Sikshana Samithi trust [The RVCE TRUST]

The Rashtriya sikshana samithi Trust (RSST) a charitable trust was founded by Sri. M.C. Shivananda Sarma, in the year 1940. RSST manages several educational institutions from Kindergarten to Professional colleges in Bengaluru. Sri Meda Kasturi Ranga Setty, a business man & philanthropist joined hands together to pull this movement forward. Today Seven decades later, RSST through the RV (Rashtriya Vidyalaya) institutions, are in the forefront among providers of quality education in the state of Karnataka. Keeping in step with its mission "Excellence in Education with Societal Commitment", its concerns have always been to provide opportunities, especially to challenged, disabled, and economically weak. RV as a brand is well respected for its clean and efficient management.

VISION

Excellence in Education with Societal Commitment

MISSION

- * To encompass every strata of education from kinder Garten to post graduation... From Humanities to sciences, Engineering & Technology to advanced specialty fields... Teachers training, education Technology and Health care
- * Molding the future of students in its fold, through setting uncompromising standards.
- * To provide educational ambience and state of the art infrastructure

The Institute

R V COLLEGE OF ENGINEERING

Established in 1963 with three engineering branches namely Civil, Mechanical and Electrical, today RVCE offers 15 Under Graduate Engineering programmes, 13 Master Degree programmes and Doctoral Studies located 13 km from the heart of Bangalore City - the Silicon Valley of India. Sprawling campus spread over an area of 52 acres set in sylvan surroundings, provides an ideal ambience to stimulate the teaching-learning process, helping in bringing out skilled and disciplined Engineers. Rated one amongst the top ten self-financing Engineering Institutions in the country.

VISION

Leadership in Quality Technical Education, Interdisciplinary Research & Innovation with a Focus on Sustainable and Inclusive Technology

PROGRAM STRUCTURE

The Aerospace programme offers a strong basic UG programme comprising of 8 semesters inclusive of one minor and one full semester major project. It also offers internships in industry / institute to the students. The curriculum consists of four core specialization viz. Aerodynamics, Aerospace Propulsion, Aircraft Structures , Guidance Control & Navigation.

- ◆ **Aerodynamics**
- ◆ **Aerospace Structures**
- ◆ **Aerospace Propulsion**
- ◆ **Avionics**
- ◆ **Humanities**
- ◆ **Management**
- ◆ **Basic sciences**

ABOUT THE DEPARTMENT

The Department of Aerospace Engineering was started in the year 2015 to offer UG program in Aerospace Engineering with an approved intake of 60. Imparting quality education in Aerospace Engineering with emphasis on research, sustainability technologies and entrepreneurship for societal symbiosis has been the primary motive behind starting this new program. The Department's main objective is to create expertise in specialized areas in Aerospace engineering such as Aerospace structural design, Aerodynamics, Propulsion systems and Guidance & control systems with focus on research and innovation.

The Department is headed by Dr. Ravindra S Kulkarni who is an alumnus of Aerospace Engineering Department, Indian Institute of Science (IISc), Bangalore. He has nearly 30+ years of rich experience in teaching and research. Presently there are two highly distinguished visiting Professors including Retd.Captain from Indian Air Force and Eight regular faculty members in the Department.



VISION

Imparting quality education in Aerospace Engineering with emphasis on research, sustainability technologies and entrepreneurship for societal symbiosis.

MISSION

Imparting knowledge in basic and applied areas of Aerospace Engineering

Providing state of the art laboratories and infrastructure for academics and research in the area of Aerospace structures, Propulsion systems, Aerodynamics and control systems.

Facilitating faculty development through continuous improvement program.

Promoting research, education and training in aerospace structures, propulsion systems, aerodynamics and control systems.

Strengthening collaboration with industries, research organisations and institutes for internships, joint research and consultancy.

Imbibing social and ethical values in students, staff and faculty

MAJOR LAB TEST FACILITIES

The department has established state of the art lab facilities in the various vertical of aerospace domain catering to Academic Experiments, as well as Projects and Research.

Aerodynamics

- **Low speed Subsonic wind tunnel**
 - Velocity up to 80 m/s
 - Steady & Unsteady Aerodynamics studies
 - 64 Channel Electronic Pressure scanner
 - 6 component Force Balance &
 - Hot wire anemometer
- **High Speed Supersonic wind tunnel**
 - Mach number $M=1.5$ to 3
 - Schlieren optical Imaging setup

Aerospace propulsion

- Micro Gasturbine Engine test rig
 - Gas path Analysis and Engine Performance Analysis
- Freejet/Nozzle Test Facility
 - Subsonic and Supersonic Jet flow studies
- Propeller Performance Test Rig
 - Performance studies and Wake studies
- Low speed open circuit Linear cascade tunnel
 - Analysis of compressor and turbine blades characteristics
- Solid rocket propellant Burning characteristics test rig

Low speed wind tunnel Velocity up to 80 m/s



The tunnel is used to determine the Aerodynamics forces on models viz. Airfoils, Cylinder, Sphere, Aircraft models etc. Besides, the tunnel is also equipped with a Smoke Wire Technique for aiding flow visualization studies on various models of interest. The tunnel is equipped with six component force balance capable of measuring three dimensional forces on an aerodynamic body at different flow conditions and orientations. Lift measurement, Drag measurement, Boundary Layer measurements, Wake measurements are some of the measurement studies are performed in the wind tunnel.

Micro Gas turbine Engine performance test Rig - 30Kg Thrust



The Aerospace propulsion lab is equipped with a Micro gas turbine Engine Test rig, Propeller Test rig, Compressor and turbine blade Cascade test rig and Subsonic and Supersonic Free jet facility.

The propulsion lab also has a unique Rocket propellant Preparation & testing Facility to study the rocket propellant burning characteristics

MAJOR LAB TEST FACILITIES

Structural Mechanics

- Universal Testing machine of 200KN capacity

Structural Dynamics

- GVT Facility

Finite Element Analysis and Fluid Flow Simulation lab

- ANSYS
- MATLAB,
- Altair Hyperworks/RADIOSS
- MSC-NASTRAN/PATRAN
- CREO

Aerospace Structures Lab



The Aerospace structures laboratory is home to some of the finest material testing and applied mechanics equipment. At the Aerospace structures lab, the learning experience of undergraduate students is enhanced by encouraging them to undertake projects and research activity. In addition, the Aerospace structures lab has facility to conduct **fatigue tests** using the state-of-the-art fatigue testing machine.

The median testing machine practically meets all the requirements of metals and composites testing for strength, durability and toughness. It is backed up with a wide choice of appropriate application software, transducers and accessories that satisfy the requirements of most standard test practices applicable to such tests. These accessories include testing of metals for tension and compression properties, low and high-cycle fatigue, fracture and fatigue crack growth, testing of composites under ambient and controlled environment for shear, tension/compression and fatigue and testing of joints and fasteners for strength and durability under a wide range of loading conditions, including constant amplitude, programmed block loading and simulated service loading.

Finite Element Analysis Lab & Fluid flow simulation Lab



The lab is equipped with high end computational facility . The structural and fluid flow analysis software has been installed and are utilized by students for academic and research project purpose.

MAJOR LAB TEST FACILITIES

* Avionics Lab

- ARINC 429 Data Bus
- Mil-Std 1553 Data Bus
- Satellite Communication System

Aircraft System & Instrumentation Lab

- Gyroscopic Instruments
- Aircraft Pressure, Temperature and RPM measurements
- Aircraft Fuel Flow System
- Air Data Measurement system

Avionics Lab

The Department of Aerospace Engineering has an Avionics Lab that houses experimental set up consisting of Avionic Data Buses, Doppler Radar Set up and Satellite Communication System. The Avionics Lab has established unique experiments involving Avionics Data Buses Experimental Set up using ARINC 429 as well as Mil-Std 1553 Avionics Data Buses. These set up explain the data transfer among Line replaceable Units (LRUs) as it takes place in aircraft or spacecraft.



Aircraft System & Instrumentation Lab

The Department of Aerospace engineering houses Aircraft Systems & Instrumentation lab which has experimental set up for studying Inertial Sensors - Gyroscopic Instruments and Aircraft Pressure, Temperature and RPM measurements, Fuel Flow System and Pitot Static Measurement System with state of art equipment.



FAQ'S

1. **What is the difference between Aerospace and Aeronautical Engineering?**

- 'Aeronautical Engineering' deals with all airborne vehicles like aircrafts, helicopters, unmanned aerial vehicles, drones, missiles etc.
- 'Aerospace Engineering' deals with airborne vehicles like aircrafts, helicopters, unmanned aerial vehicles, drones, missiles etc., plus space borne vehicles. Thus the scope of Aerospace Engineering is bigger than the Aeronautical Engineering.

2. **What is Aerospace Engineering?**

Aerospace Engineering deals with study of all aspects of airborne vehicles like aircrafts, helicopters, unmanned aerial vehicles (UAVs), drones, missiles etc., plus space bound vehicles including satellite technology. Aerospace Engineering can be broadly classified into four verticals viz.

- Aerodynamics
- Aerospace Structures
- Aerospace Propulsion
- Guidance & Control

3. **What are the Placement opportunities for an Aerospace Engineer?**

Placement is possible in both government and private sector.

Government sector- there are ample opportunities for Aerospace Engineers in Government organizations / agencies like ISRO, HAL, NAL, DRDO, ADA, GTRE etc.

Private sector- opportunities exist for placement in Aerospace majors like Boeing, Airbus, GE, UTC Aerospace and, in TCS, Infosys, TA-TA Aerospace, Mahindra Aerospace, Quest Global etc.

4. **What are the opportunities for higher studies in Aerospace Engineering?**

With a basic degree in Aerospace Engineering, one can pursue higher studies in the following-

- **Core Aerospace-** With appropriate GATE score one can seek admission into IISc, IITs and NITs for masters in Aerospace and with a valid score in GRE, TOEFL, one can secure a seat for M.S in various universities abroad in countries like USA, Australia, UK etc.
- **Non-Aerospace sector-** One can also specialize in any other domain

STUDENTS KEY ACHIEVEMENTS

Gate Rank Holders



Sacheet S Amblekar
AIR - 23
IISc, Bangalore

Aaditya U Wangikar
AIR - 30
IITK

Pushkar Choudhary
AIR - 51
IITK

Mithil K
AIR - 10
IITK

Higher Studies



Deeksha K
MSc in Aerodynamics & Propulsion
ISAE-Supaero, France

Niranjana A
MSc in Space & System Engineering
ISAE-Supaero, France

Shashank BS
MSc in Aerospace Engineering
Concordia University, Canada

Arjun R Prasad
MSc in Aerospace Manufacturing
Cranfield University, UK

Rahul Ithal HL
MSc in Aerospace Manufacturing
Cranfield University, UK

Sanmukh Sharad Khadtare
MSc in Astronautics & Space Applications
Cranfield University, UK

Contact Details

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