

Boeing Student Project Program

Applications are invited from teams comprising of 4 full-time undergraduate students of IIT Kharagpur for the Boeing Student Project in which they will be required to design, build and fly a fixed wing UAV with automatic transition capability between VTOL and cruise thruster with higher payload. Students from any department from B.Tech./ DD programs would have to form groups of 4 to compete for the project. A group can be comprised of EITHER ONLY 4th year students OR ONLY 5th year students. The general specifications of the UAV and rough outline of the project proposal are provided in the Annexure. A team must submit a project proposal involving designing, building and flying a UAV with desired specifications and make a presentation before a committee. The committee would evaluate the proposal and presentation to select two winning teams. The winning teams will work under the guidance of one or more mentors from IIT Kharagpur to complete the project within the stipulated time frame. A total one-time funding of approximately Rs.5,50,000 would be provided to the teams for procurement of materials and supplies and meeting incidental expenses related to the project.

A maximum 20 page hard copy of project proposal should be submitted to Dr. Mohammed Rabius Sunny, Department of Aerospace Engineering, along with a soft copy to boeing@aero.iitkgp.ernet.in on or before 13th August 2018. The oral presentation (not more than ½ hr.) before the committee would be held on 17th August 2018 for final selection of winning teams.

Schedule of Events

- Announcement of winning team – 20th August, 2018
- 1st Review meeting – Sept 2018 (exact date to be notified later)
- 2nd Review meeting- Oct 2018 (exact date to be notified later)
- 3rd Review meeting- Nov 2018 (exact date to be notified later)
- Flight demonstration – January 2019 (exact date to be notified later)

For further details visit <http://www.ae.iitkgp.ernet.in/boeing/index.htm>

* Please note that Boeing Student Project applicants have to individually satisfy all the eligibility criteria mentioned in 'Boeing Scholarship Program', including, minimum 8.00 CGPA criterion. Also note that Boeing Scholarship awardees would have to mandatorily undertake the Boeing Student Project.

Annexure

General Specifications of the UAV

- Fixed wing UAV with wing span of about 1m
- Payload: 1 Kg
- Endurance: 10 minutes or more
- Special Requirement: Separate set of fixed thrusters should be used for:
(a) vertical takeoff & landing (b) cruise

Rough outline of the Project Proposal

- Detailed approach for Design
 - Review of design details of existing fixed wing UAVs (as reported in open literature)
 - Specific considerations associated with fixed wing UAV design
 - Conceptual sketch
 - Weight estimation
 - Airfoil and wing geometry selection
 - Wing loading
 - Sizing
 - Thrust to weight ratio
 - Motor/ Rotor selection, sizing and positioning
 - Details on how the separate set of fixed thrusters would be used to accomplish the mission requirements
- Detailed approach for Fabrication
 - Overall Design Layout
 - Structural Details
 - Materials
 - Tooling required
 - Subassemblies
 - Ease of Fabrication and maintenance
- Autopilot development
 - Selection of Autopilot
 - Programming of autopilot for automatic VTOL and cruise
- Detailed approach for testing
 - Testing of individual sub-systems
 - Flight testing of the aircraft
- PERT Chart for the design-build-fly programme