AEROSPACE DEPARTMENT| IIT KANPUR

Check out the official department website for course templates and other info `:
https://www.iitk.ac.in/aero/
Course Template for BTech in AE at IITK :
https://iitk.ac.in/doaa/data/template/AE-template.pdf

General queries and answers to **Aerospace engineering** at **IIT Kanpur.**

Q1) What is the structure of the core curriculum in this department?
Ans. The Aerospace Engineering core curriculum begins in the second year, building on foundational first-year courses, especially in mathematics and physics. Early semesters include core courses that prepare students for advanced departmental subjects. Core topics include Fluid Mechanics, Dynamics, Thermodynamics, Aerodynamics (both compressible and incompressible), Propulsion, Aircraft Structures, Flight Mechanics, Controls, Vibrations, and Aircraft Design. The final year emphasizes electives and project work for specialization. Students also gain hands-on experience through experimental labs.

Q2) How flexible is the curriculum of this department in terms of open electives (OEs) and minors?

Ans. The curriculum becomes flexible from the third year onward although comparatively low flexibility among other branches at IITK. While the second year is mostly fixed with core aerospace courses, students can start choosing open electives and pursuing minors after that. You're required to complete at least **6 open electives and 2(or 3) Department electives** for your degree, and many students manage to complete one or even two technical minors, depending on how they plan their courses. Overall, the flexibility is moderate compared to some other departments due to more compulsory core courses. For more information regarding the course template refer to the link given above.

Q3) What is the teaching style, and how approachable are the professors in your department?

Ans. Most professors in the department are quite approachable and supportive. Many are open to helping students with doubts and guidance outside class, and some even create a very friendly, senior-like rapport. While a few may have limited time due to their commitments, they're generally willing to guide when approached. Overall, the environment balances professionalism with a helpful and approachable attitude.

Q4) Are there interdisciplinary opportunities in the department?

Ans Yes, there are plenty of interdisciplinary opportunities in Aerospace. Students can pursue minors, double majors, or even a Dual Degree (Type B),for more info refer to website and course template.IITK provides freedom to pursue Double major and minor in any department.Students can also approach profs of other departments and pursue projects in different fields regardless of their parent dept.

Q5) How difficult is the coursework in the first two / three years?

Ans. The coursework in the first two to three years can be quite challenging, especially in the beginning. The first year courses which are compulsory are tough for many due to the intense focus on math and physics, which form the foundation for later aerospace subjects. The second and third years include a heavy load of departmental compulsory courses, with difficulty ranging from moderate to hard depending on the subject. Some find the third semester particularly tough due to technical corecore courses such as fluid dynamics , thermodynamics and mechanics of solid.There is also one institute compulsory course of basic electronics which you need to do in 4th sem. That said, as students get more familiar with the concepts and develop intuition, the workload can feel more manageable over time.

Q6) What are the typical class sizes and student-to-faculty ratio?
Ans Class size of 60~70.
Student to faculty ratio about 3:1

Q7) How easy or difficult is it to branch out of/into this department?
Ans Branching in or out after the first year is possible, but it depends heavily on your CPI. Getting into high-demand branches like CSE or EE usually requires a CPI above 9.5, which is quite competitive. On the other hand, moving into Aerospace is relatively easier, often needing a CPI around 7 to 7.5, though it can vary year to year. It's much more manageable to switch right after the first year. You can also change branch after 3rd sem (Can only change once either after 1st year or 3rd sem) but it's difficult because of course prerequisites and department courses.

Q8)What advice would you give to me if I aim for a branch change out of this department after the end of my first year? Should I do it, and how could I do it?
Ans If you're aiming for a branch change, you'll need to maintain a strong CPI—ideally well above the cutoff for your target department—as these cutoffs vary each year. Make sure you don't fail any course, including Physical Education, as that can make you ineligible. However, before committing to the idea, take time to explore your interests. Talk to seniors in the departments you're considering, and think about your long-term goals rather than just following the crowd.

Q9) Is this department good for pursuing higher studies abroad or go for placements?
Ans. The department is excellent for pursuing higher studies, especially abroad, since specialization and research are highly valued. Many students go on to do masters or research because companies often prefer candidates with advanced degrees. While placements are somewhat decent, especially if you're passionate about aerospace, the highest-paying core jobs may be limited compared to other branches. Other roles like software,finance or consulting are always open for aerospace grads, many of the students pursue this. Ultimately, your path depends on your interests and efforts—the department offers a solid foundation for both academia and industry, but your personal goals will shape your journey

Q10) What are the typical career paths taken by graduates from this branch?
Ans. Aerospace grads take all kinds of paths—some end up as software developers, AI researchers, or product managers, while others work in consulting, finance, or other non-core areas. A good number also go for higher studies, like funded PhDs or master's

abroad. While many are really passionate about aerospace and research, most eventually find jobs in a wide range of fields beyond just aerospace itself.

Q11) How is the peer group and competition level in this department?
Ans. The department has a mostly collaborative atmosphere, helped by its smaller size and supportive faculty and seniors. While it can feel competitive, especially in tough courses or if you're not super interested in the material, students often do better when they study and work together. Overall, there are plenty of opportunities to explore, and reaching out for help is encouraged.

Q12) Are there any clubs or events related to the department?
Ans. Yes! There are several clubs and student groups related to the department, such as the Aeromodelling Club, IITK Rocketry Team (RaSET), and the Society of Aerospace Engineers (SAE). These clubs regularly organize events and activities for aerospace enthusiasts, providing many opportunities to engage beyond academics.

Q13) How well-equipped are the labs and infrastructure?
Ans. The department has excellent labs and facilities, including advanced setups for aerodynamics, structures, and propulsion experiments. You'll get to see things like a mini turbojet engine, one of the largest wind tunnels in the country, and even have access to an airstrip. Overall, the infrastructure is top-notch and best in the whole country which offers great hands-on learning opportunities.

Watch this video to get a better glimpse of labs and infrastructure at IITK :
Department of Aerospace Engineering I IIT Kanpur

Q14) Are there department trips, seminars, or workshops?
Ans. Yes, the Society of Aerospace Engineers (SAE) organizes seminars and workshops regularly. SAE also annually conducts Research Scholar's day where students can experience and listen to the ongoing on-campus research in the department and aerospace sports day.
Some courses or professors may arrange field trips, and a unique perk is the free glider ride for aerospace students. While department-funded trips aren't very common, there are plenty of learning opportunities outside the classroom.

Q15)General advice about the department
Ans Is the place to be if you want to go for a career in academia/are interested in Aerospace.