# International Summer schools 2025

# Why choose us?

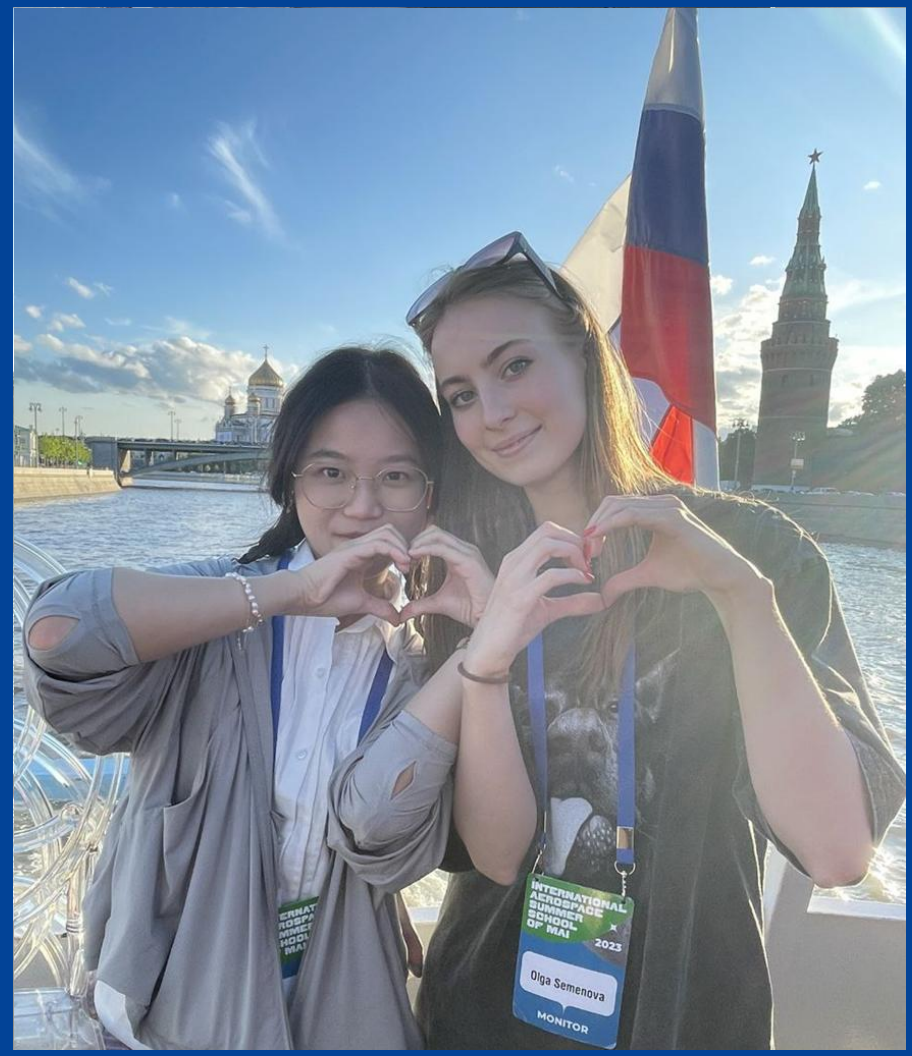
The largest aerospace university that creates technologies that define the shape of the future, prepare teams and leaders of change with more than 90 years' history.

Today MAI participates in all industrial aerospace projects being the full participant of the technologies that emerge on the market.

# Monitors

Students are accompanied by monitors. They are always ready to answer calls and messages from students, as well as help
solve any of their problems.

You will be a friendly team with monitors and other school participants. You will have the opportunity to attend all activities together and find Russian friends.



# Summer schools 2025

## Aircraft design

## Design of  aircraft structures using the example of a wing caisson

# Design of aircraft structures using the example of a wing caisson

July 7 - July 18

# Engineer The Solutions For Tomorrow's Flight

Wide range of topics related to the design and analysis of aircraft structures In a modern aircraft, it is the shape and design of the wing that largely determines the effectives of the entire aircraft, since it creates the necessary lift. Being one of the most loaded parts of the aircraft structure, the most accurate and comprehensive design and testing techniques should be applied to the wing structure.

This summer school will allow participants to cover a wide range of topics related to the design and analysis of aircraft structures using the example of a wing caisson of a civil mainline aircraft, and gain the necessary skills to work with various tools and techniques in special programs for the comprehensive development and analysis of aircraft structures, both from metals and from PCM.

## Schedule (subject to chang

### Day 1

- Opening ceremony;
- MAI tour;
- Hangar tour;
- Aircraft industry trends.

### Day 2

- Introduction to aircraft  structures;
- Fundamentals of materials resistance course;
- Introduction to the NX System. General Introduction;
- Introduction to the NX System. General Introduction.

### Day 3

- Selecting the material of construction;
- Purpose of the wing and general wing requirements;
- Fundamentals of Modeling. Sketches;
- Fundamentals of Modeling. Sketches.

### Day 4

- Specific of designing aircrafts made of metals;
- Features of designing aircrafts from PCM;
- Modeling basic designing elements;
- Modeling basic designing elements.

### Day 5

- Aircraft technology production;
- Wings structural and power schemes. Selection of the structure;
- Assemblies in CAD systems;
- Assemblies in CAD systems.

### Day 6

- Introduction to PCM;
- A pyramid of computational and experimental research;
- Get to know in Abaqus.

## ScheduleSchedule (subject to change)

### Day 7

- Composition and role of components in PCM;
- Main characteristics of PCM components;
- Finite Element Mesh Overlay. Basic operations and software capabilities.

### Day 8

- Micro and micro mechanics of PCM;
- Future trends of aerospace;
- Load application, boundary conditions.

### Day 9

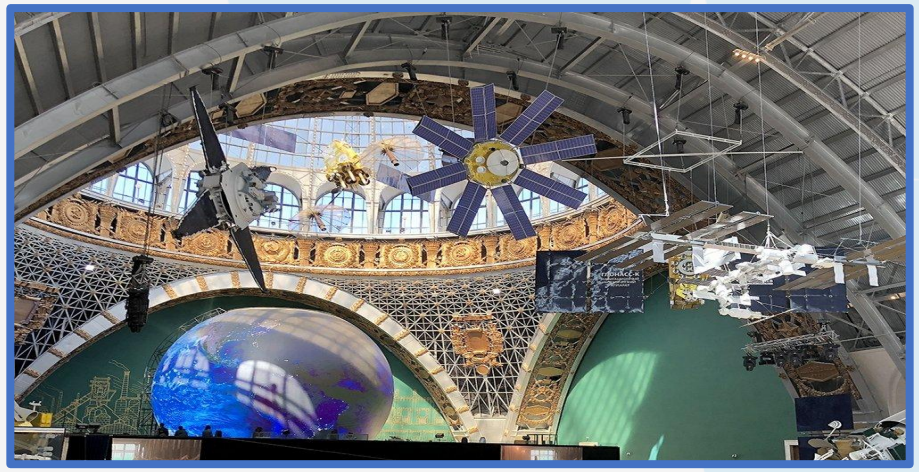
- Additive technologies and materials for them;
- Additive technology (part 2);
- Results analysis.

### Day 10

- Retrospective program overview. Part 1;
- Retrospective program overview. Part 2;
- Closing ceremony.

# Extra-curricular activities

- Attraction “Flight over Moscow”;
- Red Square tour;
- VDNKh tour;
- Excursion to the Aviation and Cosmonautics center;
- MAI tour;
- Hangar tour.



# Aircraft design

July 7 - July 18

# Where Your Aviation Dreams Take Flight

## Design Your Own Aircraft!

- Ready to take your love of aviation to new heights? Join us as we explore the latest trends shaping the future of flight! We'll delve into the nuances of aircraft design, uncover the magic of composite materials with a visit to the Aerocomposite lab to see how they're made, and tour airplane hangars to examine aircraft structures up close. Get creative and design your very own aircraft model using cutting-edge Computer-Aided Design (CAD) systems!
- But that's not all – you'll also have the chance to build your own mini-model aircraft. Test your designs in our wind tunnel and explore the possibilities in our 3D lab. This immersive summer school experience culminates in a challenging and rewarding final project. Don't miss your chance to experience aviation like never before!

## Schedule (subject to change)

### Day 1

- Opening ceremony;
- MAI tour;
- Airplane hangar tour;
- Helicopter hangar tour;
- Introduction to Aviation;
- Aircraft industry trends.

### Day 2

- How to Design an Airplane?
- Analysis of Existing Technical Solutions;
- How do operating conditions affect the appearance of an aircraft?
- MAI Experimental Plant Tour.

### Day 3

- Composite Materials in Aircraft Construction;
- Advanced Materials for Aerospace;
- Experience Aerocomposite: An Interactive Session;
- Interactive Session. 3D Laboratory.

### Day 4

- Aircraft Parameter Estimation Algorithm;
- Preliminary Aircraft Design Parameter Estimation;
- Preliminary Aircraft Design Parameter Estimation;
- CAD Modeling of Aircraft Components. Part 1.
- CAD Modeling of Aircraft Components. Part 2.

### Day 5

- Aircraft Configuration Development Based on First-Order Analysis;
- Building an Aircraft Model Using Supplied Materials;
- Airplane presentation;
- Performing Outdoor Flight Tests of Prototype Aircraft.

### Day 6

- Aircraft Dynamics and Control;
- Aircraft Type Selection and Configuration Optimization. Analytical Methods for Layout and Aerodynamic Design. Part 1;
- Avionics.

## Schedule (subject to change)

### Day 7

- Artificial Intelligence and Aviation;
- Defining Aircraft Configuration from Calculations. Creating a Geometric Aircraft Model. Part 1;
- Defining Aircraft Configuration from Calculations. Creating a Geometric Aircraft Model. Part 2;
- Engine museum tour.

### Day 8

- External Environment Simulation - Gas-Dynamic Tests. Part 1;
- External Environment Simulation - Gas-Dynamic Tests. Part 2;
- Preparing a Geometric Model for Numerical Simulation. Creating a Computational Domain. Developing a Mesh Model. Part 1;
- Preparing a Geometric Model for Numerical Simulation. Creating a Computational Domain. Developing a Mesh Model. Part 2.

### Day 9

- Modeling External Impact Conditions. Solution Finding. Part 1;
- Modeling External Impact Conditions. Solution Finding. Part 2;
- Testing of the Designed Product;
- Finalization of Group Project Preparation.

### Day 10

- Project Presentation;
- Closing ceremony.

# What is included in the program?

- Visa assistance;
- Accommodation (MAI dormitory);
- Transfer;
- Educational and cultural program;
- Full-time support;
- Graduation certificate.

**Program cost:**

**500$**

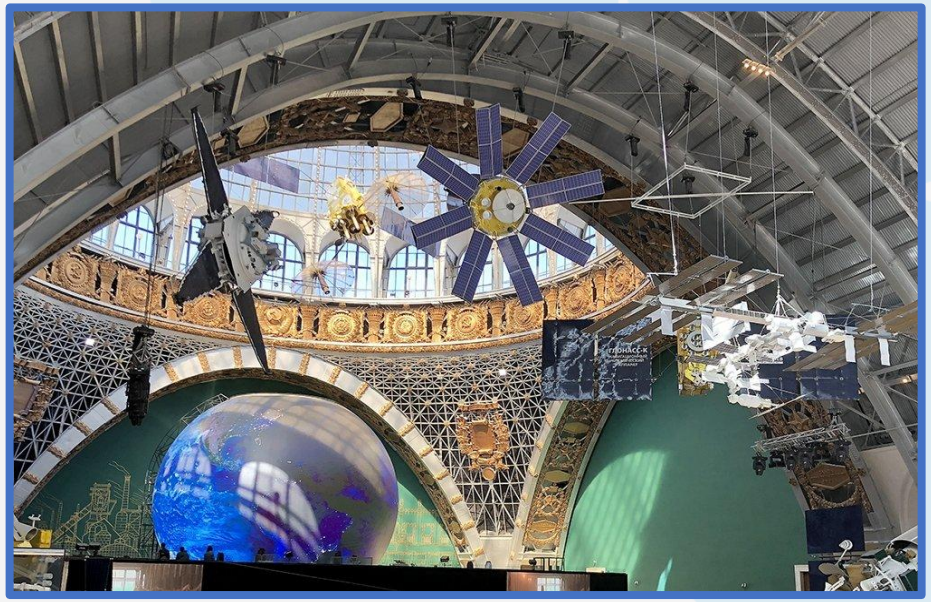
150$ - Accommodation, airport transfer, visa assistance

Registration period:
until May 30

*The maximum credit for each program: 1,5-2 credits.

# Extra-curricular activities

- Attraction “Flight over Moscow”;
- Red Square tour;
- VDNKh tour;
- Excursion to the Aviation and Cosmonautics center;
- MAI tour;
- Hangar tour.



# What is included in the program?

- Visa assistance;
- Accommodation (hotel);
- Breakfast (hotel), Lunch (on campus)
- Transfer;
- Educational and cultural program (more activities);
- Full-time support;
- Graduation certificate.

*The maximum credit for each program: 1,5-2 credits.

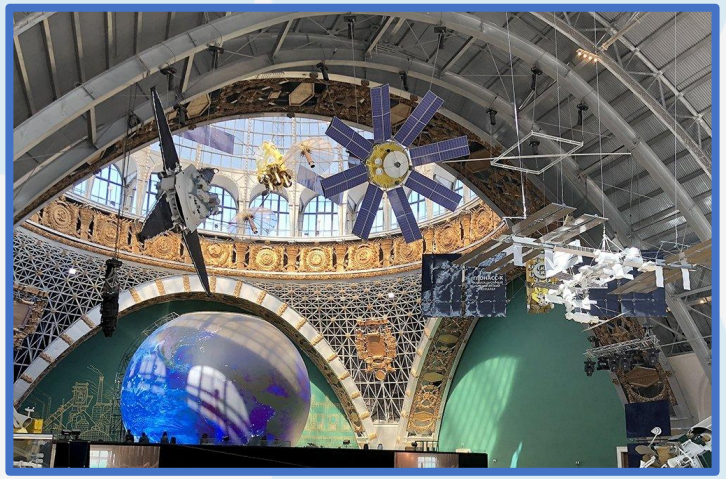
**Program cost:**

**1700$**

**Registration period:**
**until May 30**

# Extra-curricular activities

- Russian cuisine master-class;
- Attraction “Flight over Moscow”;
- Red Square tour;
- VDNKh tour;
- Excursion to the Aviation and Cosmonautics center;
- MAI tour;
- Hangar tour.



# Where will students live

**place to live**

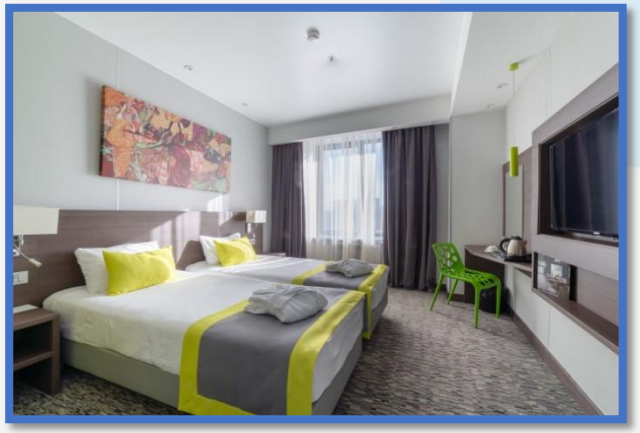
Hotel (subject to change)

**advantages**

- Close to the university
  (10-15 min walk)
- Close to the metro
  (7 min walk)

**Special living arrangements**

Breakfast is included



# Contact us: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