



Higher School  
of Economics

Vysokovsky Graduate  
School of Urbanism



**shukhov  
lab**

# Prototyping Future Cities

International Master's Programme



Master's programme

## Prototyping Future Cities

**Vysokovsky Graduate School of Urbanism**

### Admission Information

Fee-paying  
places

**20**

Fee-paying places for  
international students

**15**



Field of study: 07.04.04 – Urban Studies and Development



Duration of Master's programme: 2 years



Mode of study: Full-time programme



Diploma: Master of Spatial Planning and Urban Development HSE



Language of Instruction: English



Address:

20 Myasnitskaya, Moscow 101000 Russia

Programme manager:

Alexandra Tikhonova

E-mail: [aatikhonova@hse.ru](mailto:aatikhonova@hse.ru)

[www.hse.ru/en/ma/techcity](http://www.hse.ru/en/ma/techcity)



Master's programme Academic Supervisor  
**Vicente Guallart**

## About

What will be the city of the future? Which skills will be required of professionals to build a smart city? How to operate at the intersection of technology innovation, urban design, business models, strategy and society? The international Master's programme 'Prototyping Future Cities' gives the integrated education with a multidisciplinary approach in relation to the urban project, any type of technology, and urban studies that allow to have a holistic approach to the expansion and regeneration of cities. It is intended to create a new type of professional that can develop any kind of project in order to lead urban transformation. The programme is led by international experts and Russian scholars who form the agenda for smart city development and teach you to understand the city at all of its scales and solve urban problems using technology.

## Academic supervisor

### **Vicente Guallart**

Shukhov Lab founder  
Chief Architect Barcelona City Council (2011-2015)

## How to apply

### **What documents do I have to submit?**

- Copy/scan of your valid passport;
- Certified copy of your Bachelor's and/or Master's degree;
- Certified copy of your Transcript of Records/list of grades;
- Two letters of recommendation;
- Resume / Curriculum vitae;
- Motivation letter.

All document should be prepared in English.



Two-year Master's programme 'Prototyping Future Cities' offers the opportunity to study the impact of information technologies on cities, based on the method 'learning by doing'. The master takes place in the Shukhov Lab, located in the center of Moscow, with access to advanced digital manufacturing machines where students can develop prototypes. The master covers a wide range of subjects, including Big Data, Urban Projects, Mobility, Economy and Housing, enabling students to lead urban transformation, both from the private and public sectors. We wait for you.

**Vicente Guallart,**  
Academic Supervisor

## Admission requirements and portfolio items:

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1. Properly recognized diploma  
or certificate + transcript

If you have not yet received your Bachelor's diploma, please include an official copy of your most recent academic transcript.  
0 - 20 points

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2. Two letters of recommendation  
(in English)

A typical letter of recommendation should contain referee's: full name, position, workplace, academic degree, phone number, email.  
0 - 10 points

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3. Resume / CV (in English)

Please submit a standard CV, including, at a minimum, your educational achievements, work and research experience, publications (if any), and language knowledge.  
0 - 10 points

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4. Letter of Motivation (in English)

This letter (1,5-3 pages) should describe your reasons for applying to this programme, in the context of your long-term career goals and background.  
0 - 30 points

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5. Interview (in English) with  
the programme curator or/and  
programme academic supervisor

Key criteria: erudition, critical literature review, spoken English, clarity of intent, interest in the topic; basic research and design skills.  
0-30 points

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The programme is definitely not a ‘sit and read your book’ experience. It’s all about practical experience. This is a Moscow-based programme, but the things we are learning are not only applicable to Russian cities. They are applicable to all cities that are implementing technological innovations. Smart cities can be anywhere in the world. How we are taught has diverse applications.

**Neeraj Mazumder,**  
second-year student (India)

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## **Submit your application online at the HSE portal**

To apply for the international Master’s programme ‘Prototyping Future Cities’ of HSE Graduate School of Urbanism, please, fill out and submit the HSE’s online application form.

For the online application, all documents have to be submitted in English PDF files and include your last name in the filename (for example, Smith\_Diploma.pdf).

## **Programme facts**

The research and project agenda of the international Master’s programme ‘Prototyping Future Cities’ is developing within 5 key educational layers: City Project, Technology, Information, Management and Culture. The programme consists of compulsory disciplines, research activities, international workshops

and internships. It focuses on digital fabrication, big data, internet of things (IoT), urban design, social innovations and smart urban technologies. The programme focuses on the different scales of urban reality – objects, buildings and a city as a whole. Curriculum is formed in accordance with the modern requirements for training specialists in smart city development.

## **International field trips**

International field trip is a part of studies where innovators have an opportunity to learn about the most recent research and projects in smart city development, new technologies and self-sufficient building from the leading world experts.

2018 – ‘Self-sufficient city’ workshop, Barcelona

2019 – ‘Self-Sufficient Housing’ workshop, Copenhagen

## Shukhov Lab

The Master's programme 'Prototyping future cities' takes place in Shukhov Lab at the National Research University Higher School of Economics in Moscow. Shukhov Lab is one of the FAB LAB global network laboratories for experimental urban design. Fabrication of emerging prototypes is a key feature of the Master's programme. In Shukhov Lab students have full-time access to the technological resources such as 3D printers, laser cutters, CNC machines etc. Here innovators bring into life the most adventurous and boldest architectural and design ideas and work closely with the leading experts on a daily basis.

## What skills will I develop?

Master's programme curriculum and educational technics gives students the ability to train both hard and soft skills which adds value to the CV and successful career.

### Tech Hard Skills

- computer aided design: raster, vector, 3d design, parametric design, game engines and simulations;
- laser and vinyl cutting: materials, marking, engraving, folding, press-fit constructions;
- 3D printing: principles, processes, machines and software, scales;
- cnc milling: materials, scales;
- electronics design, fabrication and programmaming;
- multi axis industrial robots: scanning, milling, printing;
- many optional skills: city sensing, data visualization, drones operations and 3d;
- scanning, projection mapping, augmented reality, computer vision.

### Soft Skills

- public presentation
- critical writing
- hands-on
- strategic thinking
- decision making
- adaptability
- problem-solving
- multitasking

## Partners

- IAAC Institute of Advanced Architecture Catalonia Valldaura Labs
- Polytechnic Museum
- Habidatum
- Urbica

## Courses

The research and project agenda of the international Master's programme 'Prototyping Future Cities' is developing within 5 key educational layers:

### City Project

- Things
- Buildings
- Spatial Planning, Analysis and Urban Design

### Technology

- Things@LAB
- Resources@LAB
- Communities@LAB

### Information

- Recording Sociology
- City Big Data
- Mapping Economy

### Management

- New Business Models
- Legal Regulation of Urban Development
- Impact Analysis

### Culture

- Reading on Urbanity
- History of Urbanism
- City Protocol

International field trip is a part of studies where innovators have an opportunity to learn about the most recent research and projects in smart city development, new technologies and self-sufficient building from the leading world experts.

## Lecturers

- **Elena Mitrofanova**  
Leading Expert at Shukhov Lab, architect. MA in Advanced Architecture, Institute for Advanced Architecture of Catalonia.
- **Ivan Mitrofanov**  
Leading Expert at Shukhov Lab, engineer. Degree in Information and Computer Science. Moscow State University of Forest.
- **Andrey Yelbaev**  
Project Leader at Strelka KB, architect. MA in Architecture and Digital Media, University of Westminster.
- **Benito Juarez**  
President at FAB LAB Peru. Degree in Architect National University of Engineering, Lima.
- **Nadia Khort**  
Head of Shukhov Lab. MA in Urban Planning, HSE Graduate School of Urbanism.
- **Alexander Ostrogorsky**  
Tutor and Curator of Public Programme at MARCH Architecture School, journalist. Degree in Art, Moscow State University.
- **Sofia Gavrilova**  
Photographer, geographer, curator. PhD in Geography and the Environment, Oxford university. PhD in Cartography: Moscow State University. MA in Photography, Rodchenko Art School of Photography and Media.



- **Vadim Smakhtin**  
CTO, Partner at Habidatum,  
software engineer. MA of  
Engineering, Samara State  
University of Architecture and  
Civil Engineering.
- **Andrei Ptitsyn**  
Deputy Director at Synesis.  
PhD in Economics, assistant  
professor at Moscow State  
University, SUNY Canton (USA),  
University of Pittsburgh (USA),  
Xing Wei College (China).

## What are career perspectives after graduation?

After finishing the programme, students could work as:

City managers, interested in understanding the full potential of information technology in order to optimize the efficiency of their cities or implementing new principles that affect a cities performance;

Architects, who understand the city at all of its scales and practice urban design;

Private sector workers in the field of developing, maintaining and/or managing a city and its urban services and products, interested in integrating information technology in the process of their work;

Experts in information technology interested in the performance of a city with the end goal of developing new application implementable at an city scale.



# Reasons to Enroll in HSE's Master's programmes:



## Become Part of a Global World

HSE University is a full member of the international academic community: the university offers over 50 double-degree programmes with leading global universities, as well as an extensive number of student exchange programmes (semester or full year at a foreign university).



## Work that Doesn't Compromise Studies

Over 70% of Master's students combine work and studies thanks to the flexible schedule and a wide range of optional courses; this allows each student to design a curriculum based on individual needs.



## Follow Your Interests

The great number of Master's programmes at HSE allows students to adjust or even radically change their career trajectories as their interests change, opening up new horizons for self-fulfilment.



## Experience a Multicultural Environment

HSE is a global university with over 25,000 students from dozens of countries. You can truly immerse yourself into a multicultural environment and learn the traditions of other nations.



### **Education that Meets Job Market Demands**

HSE attracts professionals from leading Russian and international companies to teach in its Master's programmes. Workshops, case studies, and internships provide an opportunity to become part of the professional community in your field even before graduation.



### **Leading Research Centre in Russia**

HSE University is a leading Russian multidisciplinary research centre. Each year, HSE experts carry out more than 150 fundamental science research projects and over 450 applied research projects.



### **Boost Your Earning Potential**

Graduates of HSE Master's programmes earn 20% more on average than those who only hold a Bachelor's degree. This means that investment in education pays off within the first year of graduation from a Master's programme.



### **Become Part of Something Bigger**

Being an HSE graduate not only signifies a wealth of relevant knowledge and a degree from Russia's leading university, but it is also an opportunity to become part of one of the largest alumni communities, which already counts over 50,000 people and is growing every year.



### **Build Social Capital for Future Success**

Studies at HSE bring an opportunity to create a vast network of contacts in professional and academic communities, which will be useful for achieving the most ambitious goals.



### **Recognition by the Global Academic Community**

HSE University appears in all of the rankings of the most prestigious global universities and is listed as Russia's best young university (universities founded no more than 50 years ago).



### **Contacts**

13, bld 4 Myasnitskaya str.,  
Moscow 101000

**[hse.ru/en/ma/techcity](http://hse.ru/en/ma/techcity)**

### **International Admissions**

room 206b, 20 Myasnitskaya str.,  
Moscow 101000

**WhatsApp:** +7 (916) 087 0455

**E-mail:** [aatikhonova@hse.ru](mailto:aatikhonova@hse.ru)

**Instagram:** [shukhov\\_lab](https://www.instagram.com/shukhov_lab)

**Facebook:** [shukhovlab](https://www.facebook.com/shukhovlab)