2023 Summer School on Smart Cities

July 3-9, 2023

BACKGROUND

The 2023 International summer school will be jointly organized by ISPRS SC, ISPRS TC V, Beijing University of Civil Engineering and Architecture (BUCEA), and Belt and Road Architectural University International Consortium (BRAUIC), mainly focus to the methods and technologies on Smart City. It will be held in BUCEA, during July 3-9, 2023, which is located in Daxing District, Beijing, China.

Experts from international universities and ISPRS will be invited to give lectures to the students and young technicians so to provide them with innovative practical and methodological knowledge and skills on smarter construction, management, artificial intelligence, resourcefulness of city and sustainable development plan. In addition to the regular courses, a variety of cultural practice activities will be arranged. The summer school will promote the multi-cultural, multi-disciplinary and multi-level communication among students from different countries and regions.

2022 Virtual Summer School have been successfully organized by ISPRS TC III, ISPRS SC and BUCEA, there were 228 students joining us who came from 66 universities, 29 countries. BUCEA also has successfully organized five International Summer schools since 2016, with more than 1200 attendees from more than 100 universities. One out of five is the ISPRS SC and TC III joint Summer School held in May 2018.

REGISTRATION

To participate this event, please complete the registration form and send it back to **buceaiss@hotmail.com** by **10 June 2023.** The organizers will review the applications and send the notification of acceptance to those who meet the requirements. Each student need to pay registration fee (5000 RMB), which includes accommodation, tuition fee, food, activities, pickup service.

VENUE

15 Yongyuan Rd., Huang Village, Daxing District, Beijing

AGENDA

Note: the time in the agenda is **Beijing Time（UTC+8）**, 8 hours ahead of GMT.

No.	Institution	Subject	Lecturer
July 3 (Monday)			
Moderator: Prof. Tao Chen, Vice Dean, International Development Research Institute, BUCEA			
9:00-9:30	Opening Ceremony & Welcome Addresses		Prof. Junqi Li
			Prof. Jie Jiang
			Laxmi Thapa, ISPRS SC
9:30-10:30	BUCEA, Beijing	Lecture I: The Building Forest—the Structure and Layout of the Last Imperial Palace in China	Dr. Wei Chen
10:30-11:30	University of New South Wales, Australia	Lecture II: Digital Twins for Liveable and Safe Cities	Prof. Sisi Zlatanova
Ancient Chinese Architecture Design: the Forbidden City (13:00—18:00)			
July 4 (Tuesday)			
Moderator: Xing Huang, Deputy Director, International Development Research Institute, BUCEA			
9:00-10:00	San Diego State University, USA	Lecture III: Stabilized or Surface-Modified Nanomaterials for in situ or onsite Remediation of Contaminated Soil and Groundwater: From Bench to Field	Prof. Dongye Zhao
10:00-11:00	BUCEA, Beijing	Lecture IV: Advanced Robotics and Industrialized Building Systems	Prof. Xiaowei Shan
Modern Architecture and Garden Design in Beijing: the Bird's Nest and Water Cube (13:00—18:00)			
July 5 (Wednesday)			
9:00-10:00	Picazo Architects, Spain	Lecture V: The Beauty Design	Mr. David Picazo
10:00-11:00	University of New South Wales, Australia	Lecture VI: To be determined	Prof. Sisi Zlatanova
Modern Architecture and Chinese History: the National Museum of China (13:00—18:00)			
July 6 (Thursday)			
9:00-10:00	North China University of Technology, Beijing	Lecture VII: City Transformation	Prof. Yassar Khadour
10:00-11:00	ZBMEC Tech. Co.,Ltd., Shanghai	Lecture VIII: The University-Industry Cooperation in Digitization and	Dr. Tuo Sun

		Intelligence of Roads	
Student Gala (19:00—20:00)			
July 7 (Friday)			
Ancient Chinese Architecture Design: the Great Wall (10:00—17:00)			
July 8 (Saturday)			
9:00-10:00	BUCEA, Beijing	Lecture IX: Beijing Overview: History, Fabrics and Buildings	Prof. Lin'an Liu
10:00-11:00	Politecnico Di Milano, Italy	Lecture X: An Outlook from Europe on Sustainable and Resilient Cities. What We Learnt and Future's Strategies	Prof. Luca Maria Francesco Fabris
Free time			
July 9 (Sunday)			
Moderator: Xing Huang, Deputy Director, International Development Research Institute, BUCEA			
9:00-10:00	Lecture XI (Workshop): Chinese Art of paper-cut (Professor Xigang Zhao, BUCEA)		
10:00-11:00	Group Presentation and Graduation Ceremony		

PROFILE OF PRESENTATIONS

WELCOME ADDRESSES

3 July

9:00-9:30

Prof. Junqi Li, Vice President, BUCEA
lijunqi@bucea.edu.cn

Prof. Jie Jiang, Secretary General, ISPRS
jiangjie@bucea.edu.cn

Er. Laxmi Thapa, President, ISPRS Student Consortium (need confirmation from ISPRS)
thapalaxmi278@gmail.com

LECTURE 1

3 July

9:30-10:30

Dr. Wei Chen
Lecturer, BUCEA, Beijing
chenwei@bucea.edu.cn

The Building Forest—the Structure and Layout of the Last Imperial Palace in China

To be determined

Biography

Dr. Wei Chen received his Ph.D. in architectural history and theory from the University of Pennsylvania and is a lecturer at the School of Architecture and Urban Planning, Beijing University of Civil Engineering and Architecture. He teaches the History of Chinese Architecture, Parametric Design and other courses. His research focuses on the theory and preservation of heritage buildings. He has published more than 20 papers in academic journals such as Architectural Journal, Architect, World Architecture, and Ancient Architecture and Landscape Technology. He has presented 8 papers at important international conferences such as ISAIA and won the title of Beijing High-level Talents Studied Abroad in 2022.

LECTURE 2

3 July

10:00-11:30

Prof. Sisi Zlatanova

President, ISPRS TC on Geospatial Information Science, University of New South Wales, Australia

s.zlatanova@unsw.edu.au

Digital Twins for Liveable and Safe Cities

How to use Digital Twin for energy saving, safety and security, environmental monitoring for smarter cities.

Biography

Dr. Sisi Zlatanova is a Professor at the Faculty of Built Environment, UNSW, Sydney, Australia and Director of Geospatial, Research, Innovation and Development (GRID) cluster. She has graduated at the University of Architecture Civil Engineering and Geodesy (UACG), Sofia, Bulgaria and obtained het PhD on 3D GIS for urban development at Graz University of Technology, Graz, Austria. She has worked as surveyor at the Bulgarian National Cadastre, Sofia (1985-1990), assistant-professor at UACG (1990-1995), researcher at ITC, Enschede, Netherlands (1995-1999), visiting professor at SSUGIT (2015-2017) and associate professor at Delft University of Technology (2000-2018).

Her research interests are in 3D modelling (indoor and outdoor) and applying 3D technologies for crisis management. She gives courses on 3D Modelling and Spatial Decision Support Systems for professional and research students. She has been an invited lecturer in China, Italy, Czech Republic, Germany, Bulgaria, Austria, Russia and Spain. She is (co-)author of more than 350 scientific publications and (co-)editor of 22 books. She is editor-in-chief of the International Journal of 3D Information modelling. She has been actively involved in several national and international projects as project leader and WP leader. She is a President of the ISPRS Commission IV 'Spatial Information Science' (2016-2020) and co-chair of OGC SWG IndoorGML. She is principal organiser of the annual international conference Gi4DM and chair and co-chair of several other international conferences (3DGeoInfo, Gi4DM, UDMS, 3DIndoor).

LECTURE 3

4 July

9:00-10:00

Dr. Dongye Zhao

Professor and Department Chair, San Diego State University, USA

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Per- and polyfluoroalkyl substances: occurrence, properties, and degradation

Per- and polyfluoroalkyl substances (PFAS) have been widely detected in water bodies worldwide. Yet, due to the unique chemical structure and extremely high stability, cost-effective technologies for degradation in water are urgently needed. For treating PFAS in contaminated water, we synthesized and tested a class of reusable adsorptive photocatalysts based on low-cost and well-accepted commercial materials, such as activated carbon, titanium dioxide and iron oxides. As an adsorbent, the materials can effectively adsorb or pre-concentrate PFAS such as PFOA and PFOS from water through commonly used reactor configurations (e.g., fixed-bed column or batch reactor); as a photocatalyst, the materials can rapidly and nearly completely degrade PFAS under UV or solar light. For example, at an initial concentration of 100 µg/L of perfluorooctane sulfonate (PFOS) and at a material dosage of 1-2 g/L, the materials can remove more than 99% of PFOS from water within 10 minutes. Subsequently, when the PFOS-laden materials were subjected to UV or solar light, ~88% of

PFOS was degraded within 4 hours, of which more than 46% was completely mineralized. The efficient in situ photodegradation also regenerates the materials, allowing for repeated uses of the photocatalysts without incurring costly chemical regeneration and without generation of process waste residuals. The adsorption photocatalysts enable a novel 'concentrate-&-destroy' strategy for more cost-effective removal and destruction of PFAS in contaminated water.

Biography

Dr. Zhao is a professor and the chair of the Department of Civil, Construction and Environmental Engineering at San Diego State University. Dr. Zhao has served as PI or Co-PI for ~50 research projects totaling ~$9 million. He and co-workers have published more than 220 SCI-indexed journal papers, one textbook, 15 book chapters, and 250+ other publications. In addition, he has delivered 135+ invited or keynote presentations/lectures worldwide, and has been granted 7 U.S. patents. His work has been cited ~18,000 times with an h-Index of 67 according to the Google Scholar. He is included in both the Clarivate World's Top 1% Scientists and the Stanford World's Top 1% Scientists.

LECTURE 4

4 July

10:00-11:00

Dr. Xiaowei Shan

Associate Professor, BUCEA, China

shanxiaowei@bucea.edu.cn

Advanced Robotics and Industrialized Building Systems

Robot science fiction vs. robot reality;
Artificial intelligence and robotics;
Robotic mechanical system;
Advanced robotics and industrialized building systems at the School of Mechanical-Electronic and Vehicle Engineering;
Frontier development of robotics.

Biography

Dr. Xiaowei Shan is associate professor of Beijing University of Civil Engineering and Architecture, who is also distinguished scholar of Beijing Overseas Talent Aggregation Project. Shan obtained her PhD degree from McGill University, Canada. She worked as a former Postdoctoral researcher at the robotics laboratory at the Ecole Polytechnique of Montreal. Her research interests include: robotics, micro-electro-mechanical systems (MEMS), dynamics and control of mechanical systems.

LECTURE 5

5 July

9:00-10:00

David Picazo

Design Director, Picazo Arquitectos

david@picazoarquitectos.com

The Beauty Design

To be determined

Biography

David Picazo studied architecture in the United Kingdom (U.K.) where he graduated with Honours at the University of Portsmouth. He has worked in world-class archieural design firm such as Foster and Partners, Make Architects, etc. As well as being a world class architect, speaker, designer and movie star, he is also the President of the Spanish Chamber of Commerce in China.

ln March 2014, he founded the Beijing Office Of Picazo architects .He was one of the designers of Beijing Capital International Airport Terminal 3, and also has participated in the conservation project Of the United Nations Headquarter and the construction of London Aquatics Center. Picazo architects currently runs four international architecture, urban design, landscape and interior design offices in the world; two in Spain (S/C de Tenerife and Madrid), one in Monterrey (Mexico) and one in Beijing (China).

LECTURE 6

5 July

10:00-11:00

Prof. Sisi Zlatanova

President, ISPRS TC on Geospatial Information Science, University of New South Wales, Australia

s.zlatanova@unsw.edu.au

To be determined

To be determined

Biography

Dr. Sisi Zlatanova is a Professor at the Faculty of Built Environment, UNSW, Sydney, Australia and Director of Geospatial, Research, Innovation and Development (GRID) cluster. She has graduated at the University of Architecture Civil Engineering and Geodesy (UACG), Sofia, Bulgaria and obtained het PhD on 3D GIS for urban development at Graz University of Technology, Graz, Austria. She has worked as surveyor at the Bulgarian National Cadastre, Sofia (1985-1990), assistant-professor at UACG (1990-1995), researcher at ITC, Enschede, Netherlands (1995-1999), visiting professor at SSUGIT (2015-2017) and associate professor at Delft University of Technology (2000-2018).

Her research interests are in 3D modelling (indoor and outdoor) and applying 3D technologies for crisis management. She gives courses on 3D Modelling and Spatial Decision Support Systems for professional and research students. She has been an invited lecturer in China, Italy, Czech Republic, Germany, Bulgaria, Austria, Russia and Spain. She is (co-)author of more than 350 scientific publications and (co-)editor of 22 books. She is editor-in-chief of the International Journal of 3D Information modelling. She has been actively involved in several national and international projects as project leader and WP leader. She is a President of the ISPRS Commission IV ‘Spatial Information Science’ (2016-2020) and co-chair of OGC SWG IndoorGML. She is principal organiser of the annual international conference Gi4DM and chair and co-chair of several other international conferences (3DGeoInfo, Gi4DM, UDMS, 3DIndoor).

LECTURE 7

6 July

9:00-10:00

Dr. Yassar Khadour

Associate Professor, School of Architecture and Art, North China

yassarkhadour@ymai.com

City Transformation

To be determined

Biography

Dr. Yassar Khadour is from Syria, he received his Master's Degree and PhD Degree from Huazhong University of Science and Technology, China. He was a post PhD fellow at Tsinghua University, China and now associate professor at North China University of Technology, China. His current research interests include Earth Home design, Using sustainable Architecture in solving related problems in Villages, Vernacular architecture preservation, Design with nature.

LECTURE 8

6 July

10:00-11:00

Dr. Tuo Sun

Chief Executive Officer, ZBMEC Tech. Co.,Ltd., Shanghai, China

Postdoctor, Tongji University, Shanghai, China

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The University-Industry Cooperation in Digitization and Intelligence of Roads

As the increasing international competition, the start-ups seem impossible to break the monopoly of giant enterprises. The University-Industry Cooperation raises up a new way for young entrepreneurs. However, there are a series critical problems for them to be faced up with, such as money, team, marketing, technical barriers, and business model. In this context, a general idea of digitization and intelligence of roads and its market prospect will be introduced. The advanced products and key techniques from ZBMEC are explained. With the spring up of autonomous driving, the lecture will take Shang Jiading Urban Road, Jingxiong Highway and Wuxi National Road as examples to systematically elucidate the changes to digitization and intelligence of roads brought by ZBMEC roadside infrastructure with "vehicle-road-cloud" integrated architecture. The actual performance in safety protection, congestion management, and carbon emission control will be analysed, which can support the realisation of enhancing global competitiveness in transport and carbon peaking and carbon neutrality goals. Finally, the personal experience and advices in university-industry cooperation will be given, for facing up with strong competition regarding giant enterprises.

Biography

SUN Tuo received Bachelor degree and Master in Traffic Engineering from Beijing University of Civil Engineering and Architecture(BUCEA), China. He received Ph.D. degree from Tongji University, China. He is also a visiting scholar at Imperial College London, United Kingdom. He has had numerous publications on Intelligent Traffic Control, Traffic Prediction, and Intelligent Vehicle Infrastructure Cooperation. He is the reviewer of IEEE Internet of Things, IEEE Intelligent Transportation Systems, IEEE Transactions on Emerging Topics in Computational Intelligence and other famous international journals. He created ZBMEC Tech. Co.,Ltd. at Shanghai in 2020 after he received his Ph.D. degree, which focus on the digitization and Intelligence of roads for autonomous driving and smart travelling. He is not only the Chief Executive Officer of ZBMEC Tech. Co.,Ltd., but also the Postdoctor in Tongji

University. During his hard-working in university-industry cooperation, ZBMEC has completed sales volume over 100 million, with cooperation with Baidu, China Communications Construction, Ping'an etc. He is also awarded Shanghai Science and Technology Committee Rising-Star Program and Super Postdoctor Program.

LECTURE 9

8 July

9:00-10:00

Dr. Liu Lin'an

Professor, BUCEA, China

liulinan@bucea.edu.cn

Beijing Overview: History, Fabrics and Buildings

To be determined

Biography

Liu Lin'an received his PhD Degree at Xi' an University Of Architecture and Technology and was a visiting scholar at University Of Rome, Italy. He is the Director Of the Institute of Architects of the Architectural Society Of China, Member of the Advisors' Committee of Ministry Of Housing and Urban—rural Development, Expert from the State Administration of Cultural Heritage, & Member of the Italian International Cultural Heritage Protection Organization (ICOROM).

LECTURE 10

8 July

10:00-11:00

Dr. Luca Maria Francesco Fabris

Professor, Politecnico Di Milano, Italy

lucamariafrancesco@polimi.it

An Outlook from Europe on Sustainable and Resilient Cities. What We Learnt and Future's Strategies

It has been more than 40 years since the concept of urban ecology has been applied to landscape and urban design in Europe. The lecture introduces some of the most relevant examples, discussing the passage from theory to practice and the evolution of the concept of 'green' and 'ecology' to 'sustainable' and then to 'resilient', trying to interpret the following strategy to be applied to reach new paradigms of 'healthy' and 'resistant' strategies for the cities of tomorrow.

Biography

Luca Maria Francesco Fabris, journalist and architect, obtained a PhD in Architectural and Environmental Technology and a Master in Urban Planning and Environment. He is a Beijing University of Civil Engineering and Architecture Distinguished Expert and Associate Professor in Architectural Technology and Environmental Design at the Politecnico di Milano (Polimi - Italy) Architecture and Urban Studies Department. Fabris has taught since 1997 at the Polimi's AUIC School's MS in Architecture and MS in Landscape Architecture – Landscape Heritage, serving as a referent for several Erasmus+ agreements in Europe and

various exchange and Double Degree programs in China, Canada, and Japan. He is writing for the international architectural reviews The Plan and ABITARE and is Editorial Director of the Italian technical architectural magazine YouBuild, Scientific Director of the Environscapes book series published by Maggioli Editore (since 2008). Visiting professor at European, American and Asian Universities, Fabris focuses on research related to contemporary built environment, resilient and sustainable cities, and landscape metabolism. Editor and scientific referee of various university publications, Fabris has written several books and essays about the above subjects and serves as a specialized journal reviewer. More on www.environscape.eu

LECTURE 11

9 July

9:00-

10:00

Mr. Xigang Zhao

Professor, BUCEA, Beijing

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Chinese Art of paper-cut

To be determined

Biography

Professor Xigang Zhao is the deputy secretary general of Chinese Culture Promotion Association paper-cutting art Committee, China Publishing Association binding art committee member, China Artists Association Beijing Association member, Chinese painting and Calligraphy Research Institute member. He is known for his avant-garde paper-cutting works. He has published 20+ books and his works have been reported for 100+ times worldwide. He hopes that the Chinese paper-cutting art will connect our hearts and encourage us to jointly create a better future.

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