天津大学
TIANJIN UNIVERSITY

School of Civil Engineering Tianjin University

2020 International Summer School

School Manual

天津大学
TIANJIN UNIVERSITY

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Summer School

Theory, Application and Development of Geotechnical Engineering

Geotechnical engineering is a new discipline, which combines the soil mechanics and foundation engineering, engineering geology and rock mechanics. It is applied to the field of civil engineering from the late 1960s to the early 1970s. It is used to solve geotechnical engineering problems in the field of civil engineering, hydraulic engineering, municipal engineering and traffic engineering. With the development of social economy and population growth, human beings will constantly expand the space for survival and development. Geotechnical engineering plays an extremely important role in the development of underground space, exploitation of marine resources, construction of cross-sea bridges, undersea tunnels and artificial islands, construction of highways and high-speed railways, and protection of ecological environment.

Tianjin University and Grenoble-Alpes University, France jointly organize the first international summer school from July 3rd to July 5th, 2020, and invite four international famous scholars in geotechnical engineering as keynote speakers. The summer school aims at the needs of graduate students, undergraduates, and high school students and takes geotechnical engineering theory, application and development as the theme. It leads to further communication and discussion in geotechnical material performance, constitutive model, computational method and engineering application, to improve the students' interest in learning and their knowledge levels in geotechnical engineering as well as to promote international academic exchange and cooperation in the field of geotechnical engineering.

Universities and School

Overview of Tianjin University (TJU)

Tianjin University (TJU) is a national key university under the Ministry of Education of China. Its predecessor was Peiyang University that was founded on October 2nd, 1895 and the first modern university of China. The university is well known for its motto of “Seeking Truth from Facts", the spirit of "strict study" and " the tradition of patriotism" at home and abroad. It was reorganized and renamed with Tianjin University in 1951. It was one of the 16 national key universities identified by the Central Committee of the Communist Party of China in 1959. It was in the first group of "211 Project" and "985 Project" on the development of the national key universities in China. The University has been selected into the national "world-class university construction project" and ranked as “A class”. For a long time, after the unremitting efforts of the teachers and students of the whole university, Tianjin University has excellent faculty, distinctive academic characteristics, high education quality and scientific research level among the domestic first-class high-level research universities and it also has a great impact in the world.

Overview of Université Grenoble Alpes (UGA)

UGA (Universite Grenoble Alpes), founded in 1339, is a national comprehensive research university with a history of nearly 700 years. It is one of the oldest universities in Europe, and its teaching and research strength ranks top in France and the world. The University of Grenoble is one of the top universities in France. In October 2018, it was selected into IDEX, and will receive 700 million euros of annual funding from the French government. On January 1, 2020, the institutions of higher learning and scientific research of Universite Grenoble Alpes will be integrated into a community and strive to develop into a first-class comprehensive research university in France.

Universities and School

Introduction to School of Civil Engineering, Tianjin University

The School has three first-level programs: Civil Engineering, Hydraulic Engineering, and Naval Architecture and Ocean Engineering. The six teaching units include Department of Civil Engineering, Department of Hydraulic and Hydropower Engineering, Department of Port, Coastal, and Offshore Engineering, Department of Ship and Marine Equipment Design and Engineering Management, Department of Ocean Engineering and Intelligent Maritime and Institute of Geomechanics and Geotechnical Engineering. All three programs have a long history of education and a profound academic heritage. They have owned a high academic reputation at home and abroad. They are among the top national disciplines of China and the traditional superiority disciplines of Tianjin University, which has been supported by National "985 Project", "211 Project" and "Double First-Class" Initiative. In 2017, they jointly established the group of "Construction Engineering Safety Field". The program group was selected into one of the key fields supported by the National "Double First-Class" Initiative of Tianjin University.

The Civil Engineering Program is one of the four disciplines of Beiyang University (predecessor of Tianjin University) at the beginning of its establishment in 1895. It has always enjoyed a high academic reputation at home and abroad. It has set up an undergraduate program with three major directions including Construction Engineering, Bridge Engineering and Underground Engineering. It ranks the seventh (A-) in the 2016 fourth round of China' s Discipline Evaluation.

The Hydraulic Engineering Program, formerly known as the Hydraulics Group of Beiyang University in 1933, has a history of more than 80 years. It is one of the first batch of National Key Disciplines, with two undergraduate programs of Hydraulic and Hydropower Engineering, and Port, Channel and Coastal Engineering. It ranks the third (A-) in the 2016 fourth round of China' s Discipline Evaluation.

The Naval Architecture and Ocean Engineering Program is one of the first key disciplines in China to establish and enroll this Program. The Program has three undergraduate major directions including Ocean Engineering, Naval Architecture and International Shipping Management. In the 2019 International Soft Science Ranking, it ranks the sixth in the world, and it ranks the fourth (B) in the 2016 fourth round of China' s Discipline Evaluation.

All the three Programs have PhD programs and Postdoctoral programs. The four undergraduate programs are all national characteristic specialties with a long history and profound academic accumulation. The fields of Master of Engineering and Doctor of Engineering are entitled with Civil and Hydraulic Engineering including Civil Engineering, Hydraulic Engineering, and Naval Architecture and Ocean Engineering.

The School has three National Platform Bases including the State Key Laboratory of Hydraulic Engineering Simulation and Safety, the National Engineering Laboratory of Port Hydraulic Engineering Technology, and the National Engineering Laboratory of Digitalization Construction and Evaluation Technology on Urban Rail Transit; eleven provincial and ministerial platform bases including Key Laboratory of Coastal Civil Engineering Structure Safety of Ministry of Education of China and so on; two Overseas Expertise Introduction Projects for Discipline Innovation. At the same time, a national key scientific and technological infrastructure is under construction–"National Facility for Earthquake Engineering Simulation". The School has trained nearly 10,000 outstanding engineering and technical personnel and management personnel, making outstanding contributions to the development of the field of Construction Engineering.

Summer School Committee

International Academic Committee

Chairperson

Charles Ng , Hong Kong, China

Members

Marcos Arroyo, Spain
Giuseppe Buscarnera, USA
Bernard Cambou, France
Matthew Coop, UK
Giovani Crosta, Italy
Yujun Cui, France
Felix Darve, France
Itai Einav, Australia
Frederic Grondin, France
Mahdia Hattab, France
Pierre-Yves Hicher, France
Niels Kruyt, The Netherlands
Serge Leroueil, Canada
Man Hoi Lok, Macao, China
Olivier Millet, France
Akira Murakami, Japan
Yukio Nakata, Japan
François Nicot, France
Catherine O' Suillivan, UK
Claudio di Prisco, Italy
Patrick Selvadurai, Canada
Jianfu Shao, France
Kenichi Soga, USA
Antoinette Tordesillas, Australia
Stefano Utili, UK
Richard Wan, Canada
Yoichi Watabe, Japan
Wei Wu, Austria
Xia Li, China
Wanhuan Zhou, Macao, China

Summer School Committee

Hosting Universities

Tianjin University(TJU)
Université Grenoble Alpes (UGA)

Supporting Units

TJU-Overseas Expertise Introduction Project for Discipline Innovation of Earthquake Engineering Comprehensive Simulation
TJU-Overseas Expertise Introduction Project for Discipline Innovation of Hydraulic Engineering Simulation and Safety

Local Academic Committee

BA Zhenning	BAI Chengjun	BI Jihong	CHEN Nianzhong	CHEN Zhihua	DING Yang
DU Zunfeng	FENG Ping	GAO Xueping	HAN Qinghua	HUANG Yan	JIANG Mingjing
JIAO Xiuwen	LEI Huayang	LI Fawen	LI Hongtao	LI Mingchao	LI Ying
LI Zhiguo	LI Zhongxian	LIAN Jijian	LIANG Jianwen	LIU Donghai	LIU Hongbo
LIU Liqin	LIU Run	LUO Hanbing	LUO Yansheng	MA Bin	MA Chao
QIU Changlin	SHI Yanchao	TANG Yougang	TIAN Li	TONG Dawei	WANG Guodong
WANG Haijun	WANG Jianhua	WANG Xiaoling	WANG Yuanzhan	XIA Kaiwen	XIE Jian
XU Jie	XU Lixin	XU Wanhai	YANG Shugeng	YU Jianxing	YUAN Fang
ZHANG Chen	ZHANG Jinfeng	ZHANG Jinyuan	ZHANG Puyang	ZHANG Qinghe	
ZHANG Sherong	ZHAO Gaofeng	ZHENG Gang	ZHU Haitao	ZHU Jinsong	

Local Organizing Committee

Director: HAN Qinghua
Deputy Director: JIANG Mingjing WANG Wei GAO Xifeng SHI Yanchao MA Bin
Secretary: HE Li ZHU Haitao
Secretary Group: LEI Huayang LU Yan CHENG Xuesong XU Jie WANG Fengyang ZHAOHailong

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Keynote Speakers

Prof. Giuseppe BUSCARNERA,

Northwestern University, Chicago,

USA, g-buscarnera@northwestern.edu

Prof. Buscarnera obtained his B.S. and M.S. in Civil Engineering from the Politecnico di Milano and a Ph.D. in Geotechnical Engineering from Politecnico di Torino. Prior to joining Northwestern University, he has been a postdoctoral associate at the Politecnico di Milano and has collaborated with several institutions, such as the Universidad Politecnica de Catalunya, the Massachusetts Institute of Technology and The University of Sydney. Professor Buscarnera' s research focuses on the theoretical study of failure processes in geomaterials, with emphasis on the multi-physical agents that can generate failure and deformation in geotechnical systems. The objective of his research is to develop new methods to improve our ability to assess the susceptibility to natural hazards, improve the design of civil infrastructures and assist the development of safe and sustainable energy technologies. He is serving as the PI of various sponsored research projects on these topics and his research has been awarded with the Faculty Early Career Development Award (CAREER) from the National Science Foundation and the ASCE Arthur Casagrande award.

Keynote Speakers

Prof. Mahdia HATTAB,

Université de Lorraine, France,

mahdia.hattab@univ-lorraine.fr

Prof. Mahdia Hattab is full Professor of civil engineering at the Université de Lorraine, she works in the field of Soil mechanics and Geotechnics. At the Université de Lorraine she teaches an undergraduate course of geotechnical engineering, and applications of finite elements to geotechnical structures, a graduate course of soil mechanics and, at doctoral level, a course in multiscale multiphysical behavior of clayey soils. Her research activities are mainly focused on experimental investigation of strain mechanisms in clayey materials. Strain mechanisms are considered from the mesoscopic scale (groups of particles) to the macroscopic scale (specimen level). Her research includes multiscale approach of deformation mechanisms, effect of the structure and cementation on soft soils behavior, microcracks network development in soft clays and micromechanical modeling of clayey material using physicochemical local properties. She serves as codirector of Civil Engineering Master of the Université de Lorraine, and as Chair of EMI « Granular Material » Committee of the ASCE on 2017-2019 . She is chair of the first EMI International Conference organized in Europe (2016 EMI International Conference).

Keynote Speakers

Prof. François NICOT,

Université Grenoble Alpes,

francois.nicot@inrae.fr

Prof. Nicot is currently Research Professor at Grenoble-Alpes University (INRAE). He received his Engineer and PhD degrees in civil engineering on 1995 and 1999, respectively, at Centrale School of Lyon (France). As a world-renowned researcher in soil mechanics, his activities deal with geomechanics, with a special focus on micromechanics of granular materials and multiscale failure modeling. Application fields span from constitutive modeling of geomaterials to gravity-driven natural hazards analysis, including slope engineering issues. He has published more than 200 articles, including 125 papers in international journals together with more than 20 collective books. He is co-director of the International Research Network GeoMech (Multi-Physics and Multi-scale Couplings in Geo-environmental Mechanics), gathering more than 25 academic institutions over the world, and is currently Editor-in-Chief of the European Journal of Environmental and Civil Engineering.

Keynote Speakers

Prof. Richard WAN,

University of Calgary,

Canada, wan@ucalgary.ca

Prof. Richard Wan is a Professor of Civil Engineering with the University of Calgary. He received a Civil Engineering degree from École Nationale des Travaux Publics de l' État, France in 1983, an MSc in Geotechnical Engineering from the University of Ottawa in 1985, and a Ph. D in Geomechanics from the University of Alberta in 1990. His research is mainly focused on modern analytical, computational and experimental methods for studying the mechanical behavior of geomaterials. He has also worked on more practical issues in the application of Geomechanics Principles and Computational Mechanics to solve energy resource extraction and geo-environmental problems in the oil industry as well as the work is in Biomedical Engineering. He currently has over 150 publications (refereed journals, conference proceedings and edited books), with a successful track record in research grants, as well as graduate student supervision. He was the first recipient of the prestigious R.J Melosh medal in finite element modelling, Duke University, USA, and earned several research excellence accolades from his peers.

Summer School Schedule

Date (Beijing Time)	Time (Beijing Time)	Activity	Host	Attendee
3rd July (Fri.)	8:30—9:00	Opening Ceremony	Prof. Li He	Dean, Experts, Students
		1. Welcome Speech (10 min.)	Dean	
		2. Introduction to TJU (20 min.)	Prof. Haitao Zhu	
	9:00—10:30	Topic: Geomechanics of wetting-induced instability in soils and hillslopes	Host: Prof. Haitao Zhu Speaker: Prof. G. Buscarnera	Experts, Students
	10:30—11:00	Discussion	Host: Prof. Haitao Zhu	Experts, Students
4th July (Sat.)	8:30—10:00	Topic:Unsaturated granular materials with focus on microstructural aspects	Host: Prof. Xuesong Cheng Speaker: Prof. R. Wan	Experts, Students
	10:00—11:00	Discussion	Host: Prof. Xuesong Cheng	Experts, Students
	15:00—16:30	Topic:Multiscale constitutive modeling of geomaterials: Applications to soil failure	Host: Prof. Jie Xu Speaker: Prof. F. Nicot	Experts, Students
	16:30—17:30	Discussion	Host: Prof. Jie Xu	Experts, Students
5th July (Sun.)	15:00—16:30	Topic:Strain mechanisms in clays experimental approaches	Host: Prof. Haitao Zhu Speaker: Prof. M. Hattab	Experts, Students
	16:30—17:30	Discussion	Host: Prof. Haitao Zhu	Experts, Students
	17:30—18:00	Close Ceremony	Host: Prof. Haitao Zhu	Dean, Experts, Students
		Closing speech	Dean	

Registration:
Please send your name, title, affiliation, e-mail address to the following address: tianjin_iss@tju.edu.cn.

Online Course Scheme

1. Teaching Method: ZOOM Meeting + Tencent Meeting (alternative way).

1). Zoom Meeting (300) ID: **510 859 2268**
2). Zoom Client
https://cernet.zoom.com.cn/download

1).Tencent Meeting (300) ID: **603 459 029**
2). Tencent Client
https://voovmeeting.com/#download-center

2. Please sign in by using your affiliation + your real name.

3. Real-time Communication

1) Join Wechat Discussion Group by searching student assistants' ID:
Mr1997_Ayan,ZXY1507112724 or meijiaxue123
Wechat Client: https://pc.weixin.qq.com/?t=win_weixin&platform=wx&lang=en_US

2) Email: tianjin_iss@tju.edu.cn