



Notice of University Alliance of the Silk Road (UASR) Virtual Summer Courses 2022

Following the success of UASR Virtual Summer Courses 2021, UASR Secretariat along with member universities and sub-alliances, will continue the endeavor this year, and roll out the UASR Virtual Summer Courses 2022 to provide high-quality international education resources for teachers and students of University Alliance of the Silk Road (UASR). The courses are open for free.

i. Duration

From June 27 to July 10, 2022

ii. Platform

The program is technically supported by International Knowledge Centre for Engineering Sciences and Technology under the Auspices of UNESCO (IKCEST). The majority of courses will be registered and accessed through IKCEST System,

The process of participation (through IKCEST) includes following steps:

1. Register for an IKCEST account (open for registry from now on)

http://ikcest.org/my/register.htm?returnUrl=http://ikcest.org/my/training_userlist.htm&type=srst

Please register only through this link. DO NOT register through other URLs.



2. Select the courses through the *Verify Codes*
3. Take the courses (June 27 to July 10, 2022)
4. Finish the survey and take the exam for each course
5. Get the E-certificate (applicable to courses learning exclusively on IKCEST)

iii. Teaching Faculties

Well-known experts and scholars around the world who focus on frontier and cutting-edge industry knowledge

iv. Course Information in details



Frontiers in Medicine 2022

Verify Code: S30286

| No. | Lecture | Lecturer | University |
|-----|--|---------------|----------------------------------|
| 1 | The future of psychotherapies. Perspectives from low- and middle-income countries | Atif Rahman | University of Liverpool |
| 2 | Drug discovery for ocular angiogenic diseases | Xiaomeng Wang | Duke-NUS Medical School |
| 3 | State-of-the-Art Animal Models of CardioVascular Disease | Jiongwei Wang | National University of Singapore |
| 4 | Studying biology using genetic perturbations | Baoxu Pang | Leiden University Medical Center |
| 5 | Comprehensive Management for Diabetes and Experience in Preventive Medicine in Japan | Yoko Iizuka | The University of Tokyo Hospital |
| 6 | Updates of SARS-CoV-2: Antiviral strategies | Mok Chee Keng | A*STAR Infectious Diseases Labs |
| 7 | Case analysis: the important role of clinical communication skills of medical practitioners in disease diagnosis and treatment | Yong Zhang | Somerville Village Clinic |

Business Law: International and Comparative Perspectives

Verify Code: S30379

| No. | Lecture | Lecturer | University |
|-----|--|----------|------------|
| 1 | Introduction | | |
| 2 | International Law and Global Business: International Perspectives | | |
| 3 | Comparative Law and Global Business: Comparative Perspectives | | |
| 4 | Law of Global Business Organisations (Corporate Nationality and Comparative Corporate Law) | | |
| 5 | Law of Global Business Transactions (Private International | | |



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|---|---|-------------|---------------------------|
| | Law and International Investment Law) | Mejía-Lemos | Xi'an Jiaotong University |
| 6 | Settlement of Global Business Disputes: Comparative Perspectives (International Litigation –Choice of Forum- and Comparative Law of International Commercial Arbitration) | | |
| 7 | Settlement of Global Business Disputes: International Perspectives (Investor-State Arbitration) | | |
| 8 | Summary and Conclusions | | |

Understanding the Multi-scale Thermal Fluid Flow Dynamics for Applications in Energy and Power Engineering
Verify Code: S30465

| No. | Lecture | Lecturer | University |
|-----|---|----------------------|------------------------------------|
| 1 | Reviewing, writing and revising useful technical papers for the international turbo-machinery community | Stephen Spence | Trinity College Dublin |
| 2 | Lattice Boltzmann Modeling and simulation of multiphase flows | Haihu Liu | Xi'an Jiaotong University |
| 3 | Bio-physical-chemical technologies in circular water systems | Huib H. M. Rijnaarts | Wageningen University and Research |
| 4 | Space radiation environment and radiation effect | Chaohui He | Xi'an Jiaotong University |
| 5 | Recent advances in computational fluid dynamics modeling of multiphase flow, sustainable combustion, and pollutant formation in industrial applications | Milan Vujanovi | University of Zagreb |
| 6 | Ground source heat pumps: design and operating conditions | Angelo Zarrella | Padua University |
| 7 | Analysis of singular phenomena in complex unsteady flow with dynamic system approach | Jiazhong Zhang | Xi'an Jiaotong University |
| 8 | Typical CFD applications in nuclear reactor thermal hydraulics research | Guanghai Su | Xi'an Jiaotong University |
| 9 | Basic principles of vacuum | Oleg B. Malyshev | Vacuum Science |



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| | | | and Technology in Accelerator Science and Technology Centre |
| 10 | Sources of gas in vacuum system | Oleg B. Malyshev | Vacuum Science and Technology in Accelerator Science and Technology Centre |
| 11 | The production of vacuum from atmosphere to high vacuum | Oleg B. Malyshev | Vacuum Science and Technology in Accelerator Science and Technology Centre |
| 12 | The measurements of vacuum | Oleg B. Malyshev | Vacuum Science and Technology in Accelerator Science and Technology Centre |
| 13 | Instruments and methods for nuclear planetology | Valery N. Shvetsov | Frank Laboratory of Neutron Physics Joint Institute for Nuclear Research |
| 14 | Reflectors for very cold neutrons based on nanopowder | E.V. Lychagin | Frank Laboratory of Neutron Physics Joint Institute for Nuclear Research |

Frontiers in Materials Research 2022
Verify Code: S30594

| No. | Lecture | Lecturer | University |
|-----|--|--------------|--------------------------|
| 1 | Low dimension electronic materials synthesis and characterization | Yi Pan | Xian Jiaotong University |
| 2 | Stress/microstructure control of 3D-printed non-weldable superalloys | Kai Chen | Xian Jiaotong University |
| 3 | Beauty of materials' structural defects | Haijun Wu | Xian Jiaotong University |
| 4 | Antimony-Based Zintl Thermoelectrics for Energy | Umut Aydemir | Koç University, Turkey |



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| | Harvesting | | |
| 5 | Thermal Spray Techniques and Their Applications | Xiaotao Luo | Xian Jiaotong University |
| 6 | Dielectric materials for electronic applications | Jing Guo | Xian Jiaotong University |
| 7 | An introduction to advanced ceramics and composites | Jiping Wang | Xian Jiaotong University |
| 8 | Advanced functional oxides for optoelectronic applications | Huajing Fang | Xian Jiaotong University |
| 9 | Two-dimensional materials for supercapacitors | Farshad Boorbor Ajdari | University of Kashan, Kashan, Iran |
| 10 | Nano-materials based sensors and its applications | Shafa Mohammad | Xian Jiaotong University |

Development Frontier and technology of low carbon chemical industry
Verify Code : S30699

| No. | Lecture | Lecturer | University |
|-----|---|-----------------------|---|
| 1 | Heat Exchangers and Networks of Heat Exchangers in Sustainable Energy Systems | Bengt Sunden | Lund University, Sweden |
| 2 | Energy system integration and the roadmap of Denmark to carbon neutrality | Haoshui Yu | Aalborg University, Denmark |
| 3 | Methane Assisted Catalytic Valorization of Low Cost Carbon Resources | Hua Song | University of Calgary |
| 4 | Membrane Distillation: the low-carbon sustainable way to produce freshwater | Jianhua Zhang | Victoria University, Australia |
| 5 | Single-atom catalysis for energy and environmental applications. | Jiong Lv | National University of Singapore, Singapore |
| 6 | Cogeneration Targeting with Process Integration | Dominic Chuan Yee Foo | University of Nottingham Malaysia, Malaysia |
| 7 | Analyzing Impedance Spectra with the Probabilistic Distribution of Relaxation Times | Francesco Ciucci | Hong Kong University of science and technology, |



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| | | | HongKong,China |
| 8 | Degradable polymers : Synthesis, Structure Manipulation and Applications | Dezhong Zhou | Xian Jiaotong University |
| 9 | Porous Organic Polymers and Carbon Neutralization | Shangbin Jin | Xian Jiaotong University |
| 10 | Selective Electrocatalytic CO ₂ Conversion | Ming Ma | Xian Jiaotong University |
| 11 | Microbial electrochemical CO ₂ fixation | Kun Guo | Xian Jiaotong University |

Basic Course of Linear Algebra

Verify Code : S30743

| No. | Lecture | Lecturer | University |
|-----|--|--------------------|------------------------------------|
| 1 | Matrices. Main Definitions And Arithmetical Operations | Margarita I.Besova | Moscow Power Engineering Institute |
| 2 | Matrix Determinant. The Inverse Matrix. | | |
| 3 | Rank Of A Matrix. The Method Of Bordering Minors. | | |
| 4 | Gaussian Method For The Matrix Rank Evaluation And Calculation Of An Inverse Matrix | | |
| 5 | Cramer's Rule For Systems Of Linear Equations. Linear Dependence and Linear Independence And Linear Independence Of Vectors. Bases | | |
| 6 | Gaussian Elimination For Systems Of Linear Equations | | |
| 7 | Consistent And Inconsistent Systems Of Linear Equations | | |
| 8 | Homogeneous And Inhomogeneous Systems Of Linear Equations | | |

Dynamics and control of the active human exoskeleton

Verify Code : S30846

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| No. | Lecture | Lecturer | University |
|-----|--|--------------------------------|--|
| 1 | The current state of development of active exoskeletons | Delshan Deeb Merkuriev Igor | Moscow Power Engineering Institute |
| 2 | Statement of tasks and directions of research | | |
| 3 | Construction and 3D modeling of an active human exoskeleton | | |
| 4 | Development of a mathematical model | | |
| 5 | Balance control of the active human exoskeleton | | |
| 6 | Methods for optimal motion control | | |
| 7 | Algorithms for optimal motion control based on system state estimation | | |
| 8 | Sensory support for motion control processes. | | |