International Summer School with SIX THEMES

Aug 1st-Aug 14th, 2022

Harbin Institute of Technology, Harbin, P.R.China

About HIT

Founded in 1920, Harbin Institute of Technology has developed into an open, multidisciplinary, research-oriented, leading national university.

Presently HIT is a member of China's top nine University Union (C9). It is a National Key University with science and engineering as its core and has developed with management, liberal arts, economy, law and other disciplines. Renowned as "the cradle of engineers," the university has many firsts. HIT established the first School of Astronautics in China. It was the first Chinese university to independently develop and enter small satellites (smallsats and microsats) into the moon's orbit. HIT was also the first to achieve satellite ground laser communication link communications. Additionally, HIT developed the first computer to play chess and talk with people and it is the first university to produce arc- and spot welding robots. HIT was the first university to reveal the virulent factor of the HIV virus. It was also the first university to achieve a major breakthrough in supporting structure development for the largest radio telescopes. The first human–machine in orbit maintenance experiments on a space operator was also developed by HIT.

At HIT, there are 23 schools, 86 undergraduate programs, 9 National Key Disciplines, 7 National Key Labs, and 39 members of the prestigious Chinese Academy of Sciences and Chinese Academy of Engineering. Eleven disciplines of HIT are ranked among the top 1% on the Essential Science Indicators (ESI) lists. The material science and computer science of HIT in particular are ranked among the top 1‰, and engineering discipline ranked among the top 1‰. In 2020, HIT ranked 6th on the list of the best global universities for engineering announced by the U.S. News & World Report.

Since its beginning, HIT has always had a strong international environment. Now HIT has signed academic cooperation agreements with 278 universities in 39 countries. These collaborations include student and faculty exchange programs, joint academic conferences, and scientific research cooperation. Together with Weihai campus and Shenzhen campus, HIT forms the pattern of "One University, Three Campuses." HIT is steadily moving towards the goal of becoming a world-class university.

About the Program

No.	Theme	Discipline
A	Mechanics in New Space Vehicles	Mechanics
B	Leading Computer Science, Creating the Future	Computer Science and Technology
C	The New Energy Materials and Devices	Chemistry
D	Physics and Future Technological Change	Physics
E	Human Health and Life Sciences	Biology
F	Pure and Applied Mathematics	Mathematics

The attached is the introduction to 6 themes in details and applicants can choose one from the six themes to participate online.

Requirements and Registration

Fluent in English and Interested in the six field.

Please send the application form to jwcjlk@hit.edu.cn.
Enrollment: no limited
Fee: free
Application Deadline: July 20th, 2022.

INTERNATIONAL SUMMER SCHOOL

MECHANICS IN NEW SPACE VEHICLES

Jul 31st – Aug 14th, 2022

Harbin Institute of Technology, Harbin, P.R. China

GENERAL INFORMATION

Mechanics is the engineering science bridging basic science and future technology. Mechanics in New Space Vehicles International summer school offers a variety of latest lectures and seminar talks about mechanics in research, design and applications of new space vehicles. Participants will be enriched specifically in the fields of integrated design of space structures, dynamics and control, high performance materials for flight mission, health monitoring of structures, etc. via theory and group research projects. It is an excellent opportunity for participants to get access to frontiers in mechanics, to work together tackling challenges, and to make academic friends worldwide. Due to COVID-19, only online option is available for international participants, others may participate online or offline.

ATTENDANCE REQUIREMENTS

Participants in undergraduate or graduate level, with background in mechanics, aerospace engineering, mechanical engineering, materials science, applied mathematics, etc. are expected. All participants must have a good command of English. Some lectures will be given in Russian/Chinese with translation.

LECTURES AND TALKS

The summer school offers three lectures and twelve seminar talks. Lecturers and speakers are invited from top institutions in Russia and China, including Lomonosov Moscow State University, Samara State University, Chinese Academy of Sciences, Harbin Institute of Technology, Tongji University, South China University of Technology , and Xiamen University.

Lecturer/ Speaker	**Institution**	**Topic (preliminary)**	**Units (50 mins/unit)**
Prof. В.М.Морозов	Lomonosov Moscow State University, Russia	Stability of time-varying systems	8 (lecture)
Prof. А.В.Самсонов	Lomonosov Moscow State University, Russia	Dynamics and kinematic stability of multibody systems	8 (lecture)

Prof. А.П.Алексеев	Samara State University, Russia	Design of Aircraft structures	8 (lecture)
Prof. В.М.Морозов	Lomonosov Moscow State University, Russia	Kinematic stability analysis of certain time-varying systems	2 (talk)
Prof. А.В.Самсонов	Lomonosov Moscow State University, Russia	Kinematic stability analysis of rigid flexible coupled orbiting spacecraft systems	2 (talk)
Prof. А.П.Алексеев	Samara State University, Russia	Stability analysis of Spacecraft orbit in coupled multi-physics	2 (talk)
Prof. Zhengming Huang	Tongji University, China	Advanced composite materials and structural strength	4 (talk)
Prof. Jinsong Leng	Harbin Institute of Technology, China	Design and applications of smart materials and structures	4 (talk)
Prof. Junzhi Cui	Chinese Academy of Sciences, China	Advanced computational methods and engineering applications	2 (talk)
Prof. Xiaohu Yao	South China University of Technology, China	Impact and failure mechanics of composite materials	4 (talk)
Prof. Xinlin Ji	Xiamen University, China	Structural Health Monitoring and applications	4 (talk)

GROUP RESEARCH PROJECT

Participants will be grouped into 6 teams or more, each with 7-10 members, to work on a project on structural design and safety assessment of space vehicles in composite materials. Each group may select one from four areas: general design of space vehicles, structural dynamics and control, computation of strength and service life, structural health monitoring of space vehicles. Instructors are available online or offline.

PROGRAM DATES AND TIMES

<table>
<tr><th></th><th colspan="6">Week 1 (8.1—8.7)</th><th colspan="6">Week 2 (8.8—8.14)</th></tr>
<tr><th></th><th>Mon</th><th>Tue</th><th>Wed</th><th>Thur</th><th>Fri</th><th>Sat</th><th>Mon</th><th>Tue</th><th>Wed</th><th>Thur</th><th>Fri</th><th>Sat</th></tr>
<tr><td>M</td><td colspan="2">Seminar</td><td colspan="2">Lecture</td><td rowspan="2">Group Research</td><td rowspan="2">Tour</td><td colspan="2">Lecture</td><td>Seminar</td><td>Seminar</td><td rowspan="2">Def-ense</td><td rowspan="2">Poster</td></tr>
<tr><td>A</td><td colspan="2">Lecture</td><td colspan="2">Seminar</td><td colspan="2">Seminar
Group Research</td><td rowspan="2">Group Research</td><td rowspan="2">Group Research</td></tr>
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(Registration: July 31th, 2022)

International Summer School

Leading Computer Science, Creating the Future

Aug 1st-Aug 14th, 2022

Harbin Institute of Technology, Harbin, P.R.China

GENERAL INFORMATION

To thoroughly implement the requirements of "Opinions on Strengthening the Training of Talents in Basic Disciplines"; to take the road of independent training of talents in basic disciplines; to adhere to the world's scientific and technological frontier, main economic battlefield, major needs of country and well-being of people; to comprehensively carry on our Party's educational policy and implement the fundamental task of morality build and cultivation, basic research talents should be vigorously cultivated for national innovation and development. Relying on advantages of our department in domestic artificial intelligence technology, intelligent interconnection and solid foundation of teaching and scientific research, the International Summer School will be held by the slogan of "Leading Computer Science, Creating the Future". It is planned to be held from August 1st to August 12th, 2022 (for two weeks), which aims to focus on the frontier knowledge of International AI development and essential research directions of basic disciplines; stimulate students' interest in the field of AI; strengthen inter school student communication; help top students in basic disciplines; establish young academic partners, and lay the foundation for building an international academic community of basic disciplines ahead.

Artificial intelligence (AI) of Computing Department in HIT embodies the achievements of more than 60 years of professional development of computer professionals, carries decades of research results of computer application technology, and relies on the powerful research and teaching team to cultivate a new group of outstanding scholars who have returned from overseas (approved by the Ministry of education in 2019). Although this major is the "youngest", it is still powerful and possesses solid foundation. Also, AI has its own characteristics. As early as 1958, it developed Chinese first digital computer that can speak and play chess, and gradually formed a computer discipline with the characteristics of HIT. The computer science and technology discipline on which it relies is one of the first batch of national key disciplines. In 2011, it entered the top 1% of computer discipline ranking list of ESI World University. Since 2012, it has been ranked fourth in the national computer first-class discipline by the Ministry of education for many times, among which, once the quality of talent training ranked the third. In 2020, it was approved as a provincial

first-class undergraduate major construction site. This major possesses excellent teaching and practice conditions, three university enterprise joint laboratories, and various software and hardware practice platforms such as man-machine dialogue platform, UAV, intelligent perception, etc.

Summer school is open to undergraduates in HIT, C9/E9 universities, and universities cooperating with Russia, etc. On the basis of the experience of previous summer schools, we aims to enrich and refine the excellent tradition; closely follow the requirements and objectives of talent training in basic disciplines; highlight the distinct theme of artificial intelligence; design teaching links that improve knowledge and ability layer by layer; take the teaching of courses in the field of artificial intelligence as the guide; intersperse cutting-edge lectures that broaden international vision; and organize research on topics that integrate theory with practice; comprehensively improve students' practical ability.

COURSES AND LECTURES

1. Courses

Arrangement	Speaker	Title	University	Course	Credit	Credit Hours
Courses (1 out of 3)	Gaurav Sharma	Professor	University of Rochester	Graphical Models and Probabilistic Inference	1	16
	Francesco Amigoni	Professor	Polytechnic University of Milan	Multi-Agent and Multi-Robot Systems	1	16
	Karabulatova Irina	Professor	Lomonosov Moscow State University	Multimodal Communication Technologies of Manipulation in Mass Media and Mass Media and Issues of Information Security	1	16

2. Lectures

Arrangement	Speaker	Title	Lectures	Credit	Credit Hours
Technique Lecture	Joseph Sifakis	Turing Prize Winner Professor			
	Zhang Hongli	Professor	Cyberspace Security Issues and Challenges	1	4
	Wang Zhongjie	Professor	Evaluation of Software Engineering Technology Solutions from the Perspective of Sociology		4
	Liu Xianming	Professor	Trustworthy AI: Theory and Application		4
	Che Wanxiang	Professor	A New Paradigm of Natural Language Processing: A Method Based on Pre-training		4

3. Project Practice

Arrangement	Speaker	Title	Course	Credit	Credit Hours
Subject Research (1 out of 9)	Wang Yadong	Professor	Research on Big Data Analysis Algorithm of Chinese Genome Based on Deep Learning Model	1	1 week
	Liu Bo	Professor	Research on Efficient Encoding and Decoding Methods for DNA Data Storage	1	1 week
	Wang Hongzhi	Professor	Paxos Algorithm Implementation	1	1 week
	Wang Hongzhi	Professor	Automatic Recommendation of Machine Learning Algorithm	1	1 week
	Wang Hongzhi	Professor	Storage and Indexing of Graph Data	1	1 week
	Ding Xiaoou	Assistant Professor	Indexing Large-scale Knowledge Maps Using AI Dynamics	1	1 week
	Zou Zhaonian	Professor	Using AI to Dynamically Select Storage Structure for Large-scale Knowledge Map	1	1 week
	Liu Shaohui	Associate Professor	Video Target Detection and Tracking	1	1 week
	Liu Shaohui	Associate Professor	Design of Image and Video Information Hiding Algorithm	1	1 week

INVITATIONAL TOURNAMENT OF AI INNOVATION

The competition adopts the method of proposition: given a task, students can use the zero-threshold AI development platform easyDL provided by Baidu, to develop and modify the model. Finally, all works will be ranked according to the effect of the task. This Invitational tournament enables students to have a deeper understanding of AI-related technologies through competitions.

INTRODUCTION TO COURSES AND LECTURERS

1. Prof. Joseph Sifakis, Emeritus Research Director at Verimag laboratory. His current research interests cover fundamental and applied aspects of autonomous system design focusing on self-driving cars.
2. Prof. GAURAV Sharma, IEEE fellow, Professor of the Department of computer science, biostatistics, computational biology, electrical and computer engineering, University of Rochester, and outstanding researcher in the field of scientific data science. Prof. GAURAV Sharma mainly majors in color imaging, image processing, multimedia security, bioinformatics, genomic signal processing, etc.
3. Francesco Amigoni, Prof. of Politecnico di MILANO, a senior member of IEEE, member of AAAI and AI*IA, studies autonomous mobile robots, multi-agent systems, etc.
4. Prof. Karabulatova Irina, chief researcher of machine learning and Semantic

Analysis Laboratory of Advanced Institute of artificial intelligence and intelligent systems at Lomonosov State University in Moscow. Prof. Karabulatova Irin won the honorary title of the Republic of Kazakhstan and also is known as “Russia’s leading psycholinguist”.

5. Zhang Hongli, Dean, professor and doctoral advisor of Cyberspace Security faculty, Department of computing, Harbin Institute of technology. Prof. Zhang was selected into the national high-level talent program and the distinguished professor of Longjiang scholars.In order to meet national needs of network and information security, she majors in information content security, network security, data security, etc.

6. Wang Zhongjie, deputy director of computing Department in Harbin Institute of technology, Dean, professor and doctoral supervisor of the national exemplary software faculty, as well as deputy director of service computing committee of Chinese Computer Federation. Prof. Wang majors in service computing, software engineering, business analysis and optimization, cloud computing and edge computing.

7. Liu Xianming, tenure professor, doctoral supervisor and assistant dean of computing in Harbin Institute of technology, has won National Natural Science Foundation of China Fund for Young, and an academic leader of the Young Scientist Studio of Harbin Institute of technology.

8. Che Wanxiang, tenure professor, doctoral supervisor, vice president of Artificial Intelligence faculty, the deputy director of Social Computing and Information Retrieval Research Center, Young National High-level Talents, the young scholar of “Longjiang scholar” of Heilongjiang Province, and visiting scholar of Stanford University.

ATTENDANCE REQUIREMENTS

International summer school welcomes sophomores and juniors of relevant majors (computer science and technology, software engineering, Internet of things, big data, artificial intelligence, information security, bioinformatics, communication engineering, automatic control, electrical engineering, etc.) from overseas cooperative colleges and domestic well-known universities. Courses are taught in English, which requires students to have relatively strong English listening and speaking skills.

International Summer School

The New Energy Materials and Devices Targeting Carbon Peaking and Carbon Neutrality

Aug 1st-Aug 14th, 2022

Harbin Institute of Technology, Harbin, P.R.China

ABOUT PROGRAM

The New Energy Materials and Devices Summer School International program will run from July 31 to August 14 in 2022 organized by School of Chemical Engineering and Chemistry. Based on the research characteristics and advantages of school of Chemical Engineering and Chemistry in sustainable energy technologies, such as "solar cells","biomass utilization" and "electrochemical energy storage", this program focuses on the theme of "New energy materials and devices under the dual carbon background". We have invited several well-known experts from Singapore Academy of Engineering, Japanese Academy of Engineering, St Petersburg State University, Ukrine Academy of Sciences, Far Eastern Federal University, Harbin Institute of Technology and other research institutes to give series of courses and lectures around the cutting-edge technology of new energy materials and sustainable energy conversion devices.

The design of courses and lectures are based on the key research direction of new energy materials and devices, and combined with the cutting-edge research progress both at domestic and foreign. It will provide a platform for students to learn, exchange and practice, and expand their international vision. In addition, a science and technology innovation competition will be held and awarded with the new energy materials and devices technology centering on the "dual carbon" strategy. These collaboration, mutual assistance and healthy competition will promote and enhance the understanding of students on the fields of new energy materials and devices.

ABOUT FACULTIES

Xiaodong Chen, Ph.D
Academician of the Singapore Academy of Engineering,
Professor of Nanyang Technological University,
Director of Innovative Centre for Flexible Devices at Nanyang Technological University.

Jianhui Qiu, Ph.D
Foreign academician of the Japanese Academy of Engineering,
Professor of Akita Prefectural University
The main founder of sino-Japanese International Conference on Composite Materials.

Luis Carlos, Ph.D
Academician of the Brazilian Academy of Sciences
Professor of University of Aveiro,
Deputy Director of institute of Ceramics and Composites.

Andries Meijerink, Ph.D
Academician of the Royal Netherlands Academy of Sciences,
Professor of Utrecht University,
President of the European Luminescence Society

Prikhna Tetiana Olexiivna, Ph.D
Academician of National Academy of Sciences of Ukraine,
Dean professor of chemistry at Kyiv National University of Construction and Architecture.

Hans Ågren, Ph.D
Professor of Uppsala University,
He is the Changjiang Distinguished Professorship.

Aleksandr A. Kuchmizhak, Researcher
Researcher of Far Eastern Federal University.

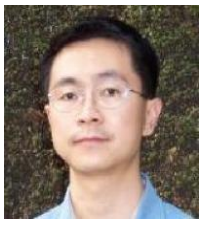
Alexander Stepanovich Grabtchikov, Ph.D
Professor of State Scientific Institution B.I.Stepanov Insitute of Physics of The National Academy of Sciences of Belarus.

Oleg Levin, Ph.D
Professor of St Petersburg State University.

Elena Alekseeva, Researcher
Researcher of St Petersburg State University.

Kuksenko Sergii, Researcher
Researcher of Ukrine Academy of Sciences.

Jiajun Wang, Ph.D
Professor of Harbin Institute of Technology,
Director of Department of Electrochemical Engineering at Harbin Institute of Technology.



Yang Gan, Ph.D
Professor of Harbin Institute of Technology,
A member of FRSC, SEMI and ESC organizations.

REQUIREMENTS

Students from chemistry, chemical engineering and material related majors will be accepted. Students must have strong English listening, speaking and writing skills so as to communicate and discuss with foreign experts in English. Students will be free for tuition and visit, and other expenses will be paid by themselves.

SCHEDULE

Class Schedule

Name of Course	Credit hours	Credits	Test Form
Course Teaching	28 credit hours	credit	Report
Cutting-edge Lecture	31.5 credit hours	credit	Report
Expert Discussion	14 credit hours	credit	Report
Experiment Course	3.5 credit hours	credit	Report
Innovation Competition	3.5 credit hours	credit	Competition

Cultural Experience

Program Name	Content
History Museum and Space Museum of HIT	Feel the centennial brilliance of HIT
Sophia Concert Hall	Enjoy the fun of music
Central Street	Experience the local customs of Harbin

2022 The New Energy Materials and Devices International Summer School Program Schedule

	July 31(Sun)	**August 1 (Mon)**	**August 2 (Tue)**	**August 3 (Wed)**	**August 4 (Thu)**	**August 5 (Fri)**	**August 6 (Sat)**
8:00-11:30	Registration	Course Teaching 1	Cutting-edge Lecture 1	Course Teaching 2	Cutting-edge Lecture 2	Course Teaching 3	Course Teaching 3
14:00-17:30	Opening Ceremony	Course Teaching 1	Expert Discussion 1	Course Teaching 2	Experiment Course 1	Course Teaching 3	Visiting Activities and Social Activities 1
	August 7 (Sun)	**August 8 (Mon)**	**August 9 (Tue)**	**August 10 (Wed)**	**August 11 (Thu)**	**August 12 (Fri)**	**August 13 (Sat)**
8:00-11:30	Course Teaching 4	Cutting-edge Lecture 4	Cutting-edge Lecture 5	Expert Discussion 3	Cutting-edge Lecture 7	Cutting-edge Lecture 8	Cutting-edge Lecture 9
14:00-17:30	Course Teaching 4	Expert Discussion 2	Cutting-edge Lecture 6	Innovation Competition	Expert Discussion 3	Visiting Activities and Social Activities 2	Expert Discussion 4
	August 14 (Sun)	**August 15 (Mon)**	**August 16 (Tue)**	**August 17 (Wed)**	**August 18 (Thu)**	**August 19 (Fri)**	**August 20 (Sat)**
8:00-11:30	Closing Ceremony						
14:00-17:30	Students Return						

International Summer School

Physics and Future Technological Change

Aug 1st-Aug 14th, 2022

Harbin Institute of Technology, Harbin, P.R.China

About Program

The Summer School International program “Physics and Future Technological Change” will run from July 31 to August 14 in 2022 organized by School of Physics in HIT. Based on the big scientific project "ground simulation device of space environment", which reveals the evolution law of material structure and the physical essence of various effects under space environmental conditions, the international courses and lectures of "condensed matter physics", "plasma physics", "optics" and other disciplines will be held online.

Based on the international frontier basic research of physics, with the help of our strong foundation of international cooperation in the field of plasma, this summer school introduces well-known physical science experts, and offers courses for undergraduates in physics and related disciplines all around the world, such as magneto-optical effect of thin films and its application, research on applied technology of plasma physics, synchrotron radiation light source, Hall effect family, etc., and lectures on light field regulation in micro nanostructures, international frontier research progress in intelligent holographic photonics, overview of space plasma, fundamentals and applications of spintronics, etc.

This summer School International program will help students master the discipline dynamics in the field of physics, realize the importance of physics to social development, enhance the interest in further scientific research, and broaden international horizons. With English teaching, students can master the basic English terms in the field of physics, and

get immersive content-based English learning opportunities while learning basic knowledge. Meanwhile, we will organize and arrange rich and colorful extracurricular teaching to make this summer school brilliant, colorful and fruitful.

About Faculties

1. Mikhail Ye. Zhuravlev, Ph. D

Professor in the National University of St. Petersburg, Russia. He has been engaged in the research of quantum mechanical transport theory and magnetic theory for a long time. In the past few years, he has made a series of breakthrough research work in the fields of ferroelectric tunnel junction tunneling resistance effect, magnetic tunnel junction tunneling magnetoresistance effect, Hall effect of nanosystems and magnetic theory, and has won unanimous recognition and high praise from the academic community.

2. Anatoly V. Vedyayev, Ph. D

Professor at the Department of physics of Moscow University, director of the Department of magnetism of the Department of physics from 1986 to 2013. He has been engaged in the theoretical research of spintronics for a long time, and has made a series of breakthroughs in the fields of spin Hall effect, spin accumulation, spin orbital torque and magnetization dynamics of nanosystem.

3. Anatoly Kudryavtsev, Ph. D

Expert in gas discharge and plasma applications, professor at the Department of physics of the National University of St. Petersburg, Russia, head of the Russian side of the "Sino Russian Joint Research Center for plasma physics application technology", and has long-term cooperation with our university in plasma physics research.

4. Vladimir Demidov, Ph. D

Professor of St. Petersburg National University and West Virginia University, he has long been engaged in plasma physical chemistry and plasma system research, and has rich research experience in gas discharge, plasma electronic equipment, complex plasma, plasma electromagnetic interaction, plasma diagnosis, etc.

5. Vladimir L. Bychkov, Ph. D

Chief scientist of Moscow State University, president of the Russian spherical discharge Association, vice president of the international spherical discharge Association, academician of the Russian Academy of natural sciences.

6. Ismail Rafatov, Ph. D

Professor in the Middle East University of technology, he has been engaged in plasma numerical simulation.

7. Chong Kim ONG, Ph. D

Professor at the Department of physics in the National University of Singapore, Chairman of the Singapore Institute of physics from 1996 to 2000, he won the highest-level outstanding research award from the National University of Singapore in 2010, and served as the first vice chairman of the Singapore Academy of Sciences from 1998 to 2000. he has been engaged in High k dielectric materials, tunable dielectric and microwave devices, left-handed materials, microwave helical filters, high-temperature superconductor devices, high-frequency magnetic films, etc.

8. Shibo Xi, Ph. D

Researcher at the National University of Singapore, participated in the construction of Beijing Synchrotron Radiation Facility (BSRF) 4B7B experimental station, upgraded 3W1B experimental station, and developed the fast scan mode of XAFCA after joining Singapore light source.

9. Xiaogang Wang, Ph. D

Professor at the School of physics, Harbin Institute of technology, chief scientist of space plasma environment simulation research system of National University of science and Engineering Headquarters, member of the National Expert Committee on magnetic confinement fusion, director of the plasma physics branch of the Chinese physical society, APS fellow; He has been engaged in plasma physics and made internationally influential research achievements in the magnetic reconnection of fusion and space plasma physics.

10. Qinghai Song, Ph. D

Professor in Harbin Institute of Technology (Shenzhen), selected into the youth talent plan of the Organization In 2012, department of the CPC Central Committee, selected as a national outstanding youth in 2020, he was. The main research direction is micro and nano scale light field regulation.

10. Liangcai Cao, Ph. D

Professor and director of the Institute of Optoelectronic Engineering of Tsinghua University. The main research fields are holography and information optics.

Requirements

Graduate students in sophomores and above, undergraduates who have general physics foundations from foreign universities will be accepted. Students must have strong English listening and speaking skills since all courses will be given in English.

Schedule of Curriculum

Class Schedule

Name of Course	Credit hours	Credits	Test Form
Magneto-optic effect of thin films and its application	8	0.5	Paper
Hall effect family	8	0.5	Paper
Synchrotron radiation light source	8	0.5	Paper
Research on applied technology of plasma physics	8	0.5	Paper
Introduction to plasma physics	8	0.5	Paper
Lectures on frontier reports in Physics	32	2	Paper

Extracurricular Teaching

Program Name	Content
IYPT subject research	Students sign up voluntarily, with 3-4 people in each group, equipped with a guidance team of professors in the schools of physics
Online tour	Online visit the big science device "space environment ground simulation system" through live or video broadcast

2022 Physics and Future Technological Change
Class Schedule

Date	Time	Class Name	Lecturer
August 1 (Mon)	13:30-14:00	Opening Ceremony	Leader of the school of Physics
	14:00-16:30	Magneto-optic effect of thin films and its application	Prof. Mikhail Ye. Zhuravlev
	18:00-20:30	Magneto-optic effect of thin films and its application	Prof. Mikhail Ye. Zhuravlev
August 2 (Tue)	14:00-16:30	Introduction to plasma physics	Prof. Anatoly Kudryavtsev
	18:00-20:30	Introduction to plasma physics	Prof. Anatoly Kudryavtsev
August 3 (Wed)	14:00-16:30	Hall effect family	Prof. Anatoly V. Vedyaye
	18:00-20:30	Hall effect family	Prof. Anatoly V. Vedyaye
August 4 (Thu)	14:00-16:30	Research on applied technology of plasma physics	Prof. Vladimir Demidov
	18:00-20:30	Research on applied technology of plasma physics	Prof. Vladimir Demidov
August 5 (Fri)	14:00-16:30	Synchrotron radiation light source	Researcher Shibo Xi
	18:00-20:30	Synchrotron radiation light source	Researcher Shibo Xi
August 6 (Sat)	14:00-16:30	High temperature superconducting microwave device	Prof. Chong Kim ONG
	18:00-20:30	Advances in numerical simulation of plasma physics	Prof. Ismail Rafatov
August 7 (Sun)	13:30-15:00	Overview of space plasma	Prof. Xiaogang Wang
	15:10-16:40	Intelligent holographic Photonics	Prof. Liangcai Cao
	18:00-20:30	Overview of plasma generation technology	Prof. Vladimir Bychkov

August 8 (Mon)	13:30-15:00	Advances in low temperature plasma physics and Application Technology	Prof. Qiuyue Nie
	15:10-16:40	Light field regulation in micro nano structure	Prof. Qinghai Song
	17:30-19:00	Nanosecond Plasma: Basic Physics and Applications	Assistant Prof. Stepan Eliseev
	19:10-20:40	Plasma physical model	Associate prof. Evgeny Bogdanov
August 9 (Tue)	13:30-15:00	Spintronics fundamentals and applications	Prof. Lingling Tao
	15:10-16:40	Influence of a magnetic field on the properties of a gas discharge and applications	Assistant Prof. Kurban Rabadanov
	17:30-19:00	Microwave methods for studying gas discharge plasma	Prof. Alexander Astafiev
	19:10-20:40	Application of high power microwave pulse compression system in science	Prof. Vladislav Igumnov

Remarks: Time for extracurricular teachings are arranged in August 10 to August 14 according to the actual registration situation.

International Summer School

Human Health and Life Sciences

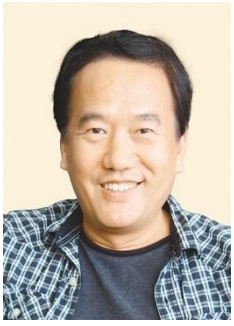
Aug 1st-Aug 14th, 2022

Harbin Institute of Technology, Harbin, P.R.China

About Program

The first Human Health and Life Sciences Summer School International program will run from July 30 to August 14 in 2022 organized by School of Life Sciences and Technology. This program offers a wide variety of English taught courses such as "the physiology and pharmacology of sleep". We have invited 20 experts with outstanding achievements in the field of lipid metabolism regulation and disease, drosophila neuroscience and so on--- Academician Wang Xiaodong of the American Academy of Sciences, Academician Chen Xiongbiao of the Canadian Academy of engineering, Academician Wang Changyong of the Eurasian Academy of Sciences, as well as scholars from well-known institutions at home and abroad, such as the Chinese University of Hong Kong, the University of Saskatchewan in Canada, Columbia University in the United States, the University of Michigan, the University of Minnesota, the University of Southampton in the United Kingdom, Gwangju University of science and technology in South Korea, Hanyang University, and the University of Tsukuba in Japan Scholars to give short courses and lectures.

About Faculties



Wang Xiaodong, Ph.D.

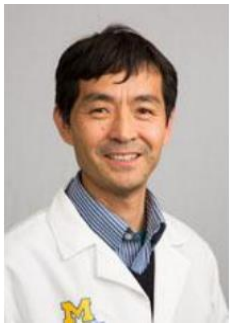
◆ Academician of the National Academy of Sciences of the United States, foreign academician of the Chinese Academy of Sciences, director of the Beijing Institute of life sciences, and founder of Baiji Shenzhou (Beijing) Biotechnology Co., Ltd.

Chen Xiongbiao, Ph.D.

◆ Academician of CAE, Professor of Biomedical Engineering Mechanical, Biomedical at the University of Saskatchewan.

Wang Changyong, Ph.D.

◆ Academician of the Eurasian Academy of Sciences, deputy director of the Institute of military cognition and brain science, Academy of military medicine.

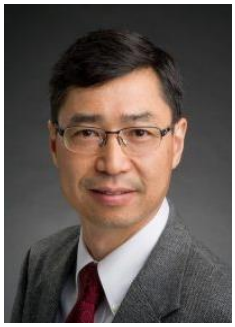


Liangyou Rui, Ph.D.

◆ Louis G.D' Alecy Collegiate Professor of Physiology Professor, Molecular and lntegrative Physiology Professor, Internal Medicine, Medical School.

Michael Lazarus, Ph.D.

◆ Professor in the Faculty of Medicine at the University of Tsukuba and a Principal Investigator at the International Institute for Integrative Sleep Medicine (WPI-IIIS).



Junmin Peng, Ph.D.

◆ Professor in the Departments of Structural Biology and Developmental Neurobiology, and Director of Center for Proteomics and Metabolomics at St. Jude Children’s Research Hospital in Memphis, Tennessee, USA.

Hanming Shen, Ph.D.

- Professor in School of Science and Health ,University of Macau.

Wendong Huang, Ph.D.

- Professor in City of Hope National Medical Center, Metabolic regulation by bile acid signaling and gut microbiota.

Yongjun Kim, Ph.D.

- Professor in School of Life Sciences, GIST, Gwang-Ju, Republic of Korea

Remarks: There are still many experts who haven't introduced. Students can know more about them in the course.

Requirements

The fresh, sophomore and junior students having a strong interest in life science from foreign universities will be accepted. Students must have strong English listening and speaking skills since courses will be given in English.

Schedule of Curriculum

Class Schedule

Course Category	Name of Course	Experts	Credit hours	Credits
Courses	Regulation of lipid metabolism and diseases	Hanming Shen, Wendong Huang, Zheng Sun, Li Qiang	24 credit hours	1.5 credit
	Drosophila neurobiology	Yongjun Kim, Greg Suh, Chunghun Lim, Anmo Kim, KIM NC, Woo Jae Kim		
Lectures	Structural biology	Huang Zhiwei	24 credit hours	1.5 credit
	Tumor biology	Liangyou Rui, Wang Yihua, Deng Mingquan		
	Biomaterials	Chen Xiongbiao, Wang Changyong, Wang Ruibing		
	Sleep	Michael Lazarus, Junmin Peng		

2022 Human Health and Life Sciences International Summer School Program Schedule

Time / Date	August 1 (Mon)	August 2(Tue)	August 3(Wed)	August 4(Thu)	August 5(Fri)	August 6(Sat)
8:00-11:00am	Drosophila vision	Visuomotor circuit for evasive flight turns in Drosophila	Metabolic signaling pathways& Neurobiology of sexual behavior of fruit fly	Neurobiology of sexual behavior of fruit fly	Frontier lectures on bioprinting and tissue engineering	
13:00-17:00		Biomaterials and frontier of nano Biotechnology	Progress in tumor treatment targets		Autophagy and metabolism	
18:00-19:00	Research progress of epithelial mesenchymal transformation in pulmonary fibrosis					
Time / Date	August 8(Mon)	August 9(Tue)	August 10(Wed)	August 11(Thu)	August 12(Fri)	August 13(Sat)
8:30-12:00am	Modeling neurodegenerative diseases using Drosophila melanogast	Neurobiology of Systems Nutrient Sensing in Drosophila	Multi-omics-based Systems Biology to Basic and Clinic Research	Rhythm and metabolism	Lipobiology	Metabolic regulation by bile acid signaling and gut microbiota
13:00-16:00		The physiology and pharmacology of sleep	Circadian rhythms and sleep	Circadian rhythms and sleep		

Remarks: Time for activities maybe changed according to the actual situation, but the contents remain the same. Some lectures may be changed; the final schedule will be announced by 25th July.

International Summer School

Pure and Applied Mathematics

Aug 1st-Aug 14th, 2022

Harbin Institute of Technology, Harbin, P.R.China

About the program

The Pure and Applied Mathematics Summer School International program will be held from July 30 to August 14 in 2022 organized by School of Mathematics and supported by the Undergraduate Colledge, Harbin Institute of Technology. The program offers four intensive courses on pure and applied mathematics. These courses relate to partial differential equations, differential geometry, Hilbert space, optimal control, Epidemiological models , game theory and decision science. They will be taught by four distinguished experts from the Ohio State University, Lomonosov Moscow State University, St Petersburg State University and University of Latvia respectively.

In addition, the program will provide opportunities to research on some specific topics related to these courses. In the end of this program, there will be a competition on mathematics. Winners in the competition will get corresponding certificate.

About the experts

Bo Guan, Ph. D.

Professor of the Ohio State University

Research fields: Geometric Analysis, Partial Differential Equations

Vladimir Markovich Manuylov, Ph. D.

Professor of Lomonosov Moscow State University

Research fields: C*-Algebra

Ovanes Petrosian, Ph. D.

Associate Professor of St Petersburg State University

Research fields: Game Theory, Decision Science

Dmitry Gromov, Ph. D.

Senior Researcher of University of Latvia

Research fields: Optimal Control Theory

Requirements

The senior and junior students of related major from universities all over the world will be accepted. Students must have strong English listening and speaking skills since all courses will be given in English.

Courses information

Name of Course	Credit Hours	Credit	Test Form
Partial Differential Equations in Geometry	16	1	Exam/ Report
Hilbert Space and Its Applications	16	1	Exam/ Report
Qualitative Analysis and Control for Epidemiological models	16	1	Exam/ Report
Game Theory and Decision Science	16	1	Exam/ Report

Schedule of the Pure and Applied Mathematics International Summer School

	Jul. 30 (Sat)	Jul. 31 (Sun)	Aug. 2 (Mon)	Aug. 3 (Tue)	Aug. 4 (Wed)	Aug. 5 (Thur)	Aug. 6 (Fri)
8:30-10:00	Partial Differential Equations in Geometry	Partial Differential Equations in Geometry	Partial Differential Equations in Geometry	Partial Differential Equations in Geometry	Partial Differential Equations in Geometry	Partial Differential Equations in Geometry	Partial Differential Equations in Geometry
14:00-15:30	Hilbert Space and Its Applications	Hilbert Space and Its Applications	Hilbert Space and Its Applications	Hilbert Space and Its Applications	Hilbert Space and Its Applications	Hilbert Space and Its Applications	Hilbert Space and Its Applications
15:45-17:15	Qualitative Analysis and Control for Epidemiological models	Qualitative Analysis and Control for Epidemiological models	Qualitative Analysis and Control for Epidemiological models	Qualitative Analysis and Control for Epidemiological models	Qualitative Analysis and Control for Epidemiological models	Qualitative Analysis and Control for Epidemiological models	Qualitative Analysis and Control for Epidemiological models
19:00-20:30							Game Theory and Decision Science
	Aug. 7 (Sat)	**Aug. 8 (Sun)**	**Aug. 9 (Mon)**	**Aug. 10 (Tue)**	**Aug. 11 (Wed)**	**Aug. 12 (Thur)**	**Aug. 13 (Fri)**
8:30-10:00	Partial Differential Equations in Geometry						
14:00-15:30	Hilbert Space and Its Applications	Game Theory and Decision Science	Game Theory and Decision Science	Game Theory and Decision Science	Game Theory and Decision Science	Game Theory and Decision Science	Game Theory and Decision Science
15:45-17:15	Qualitative Analysis and Control for Epidemiological models						
19:00-20:30	Game Theory and Decision Science						
	Aug. 14 (Sat)						
8:30-11:30	Math Competition						

Remarks: Some lectures may be changed; the final schedule will be announced by July 20.