

Advantages, Cooperation and Innovation

Fang Guanghua

Vice-President, Prof. Northwest University,
P. R. China

ABSTRACT

Northwest University is located in the original historical site of Taiping Section of the capital of Tang Dynasty. The university, founded in 1902 as Shaanxi College, is one of the key comprehensive universities in Western China and enjoys substantial support from both the central and local governments. With a total area of 370 acres, it consists of 24 schools and departments, and 16 research institutes as well. There are over 2,300 faculty and staff members, among which 1,230 are full-time teachers. The number of its students reaches 22,000, including 5,500 doctoral and graduate students as well as 600 international students.

Northwest University is one of the earliest universities that carried out international collaborations in China. As far back in the end of 1960s, we had already begun to enroll international students. Some of them are from Japan and Vietnam. In 1980s, Northwest university initiated cooperative relationship with several universities in Japan (like Kyoto University and Bukkyo University) and America (like West Michigan State University, Michigan State University, Saint Thomas University). International collaborative research always remains one of the top priorities of the university's development strategies. So far, 90 universities and research institutes from 30 countries have established partnerships with my university.

Between 2001 and 2006, 14 major international projects have been undertaken, 42 international workshops and conferences held, 710 experts invited to the university to deliver lectures and conduct research, and more than 300 mid-career faculty members sent to sister institutions for collaborative research. The prevailing internationalization of higher education and the intense competition of international tech-innovation have provided more opportunities than challenges for the university. It has taken more initiatives and allocated more resources to accomplish international collaborative research more extensively and fruitfully.

Among the 14 international collaborative research projects, I would like to highlight the following five.

1. Joint Research in Early Life Evolution

In the past ten years, the Early Life Evolution Research team headed by Prof. Shu Degan, a world prestigious expert in Geology, has cooperated productively with universities and research institutes from America, England, Germany, Canada, and Japan. Take as an example, the collaboration with Prof. Simon Conway Morris from the University of Cambridge, who is a member of British Royal Academy, it has proven to be very successful. Ten papers yielded from the joint research in the field of Early Evolution of Deuterostomia have been published in *Nature* and *Science*. Their

collaborative research has manifested the direct fossil evidence to support the discovery that Phylum Vetulicolia was the most primitive forms on morphological evolution, set up the most complete Phylogeny of Deuterostomia till now, and constructed for the first time the Phylogeny of Early Cambrian Deuterostomia and Animal tree of Cambrian Explosion. All these achievements have enriched Darwin's Theory of Evolution. These critical findings attract wide attention from all over the world.

2. Cooperative Research in Pharmaceutical and Biological Technique

National Engineering Research Center for Miniaturized Detection System of Northwest University is approved of by the Ministry of Science and Technology of the People's Republic of China. The center focuses on the miniaturized detection, advanced technology in the pharmaceutical field as well as its development and industrialization. Recently they have been endeavoring to set up a technology platform of "Personalized Medicine and Drug Screening". At present they are making great efforts to study the high drug screening technology of Cytochrome P450.

Cyprogen (USA) is a high-tech company committed to the research and development of the advanced biology products and services. They have been studying the enzyme kinetics design and results analysis for many years. Through the visiting scholar program and frequent data exchanges Cyprogen and National Engineering Research Center can take full advantage of both sides to solve current problems and achieve mutual benefits. In the recent past, they have cloned many SNP genes of CYP450 successfully and completed some drug screening in vitro. Moreover, the results are consistent with the reports of other researchers.

3. Archaeological Research of the Ancient Silk Road

Situated at the starting point of the ancient Silk Road—Chang'an, Northwest University enjoys the geographical advantage to carry out the archaeological study of the Silk Road. Founded in 1956, the Department of Archaeology is one of the oldest in China. Up till the present moment, the Department has established academic exchange relationships with universities and research institutes from over 10 countries from Asia, Europe, America, and Oceania. Hundreds of scholars and experts from the international partners have paid visits to and given speeches at the Department. They are mainly from Japan, UK, France, Germany, USA, and Italy, to name but a few. More than 20 international students have successfully completed their degree or non-degree study in the Department.

Between 2001 and 2006, the joint research projects on the ancient Silk Road with foreign partners include: 1) joint research on Historic Remains of Ancient Buddhism in Shaanxi, China with Tokyo Research Institute of Culture Properties. 2) joint research on the protection program of the Emperors' Mausoleum Stone Carving of Tang Dynasty with Tokyo Research Institute of Culture Properties; 3) archaeological research about the Silk Road with University of Vienna, Austria and Oriental University of Di Napoli, Italy. Through the above-mentioned joint projects, the similarities and differences between the Buddha molding methods in different times and places have been studied, dozens of nomadic sites along the silk road have excavated, and the essence of ancient silk road culture explored.

4. Joint Research Program of Digitalized Virtual Restoration of Damaged Relics

China is a nation abundant in historic relics, especially in its western regions. Most of the valuable relics are pottery, porcelain, bronze, and terra cotta. Unfortunately, a considerable number of them have become either fragments or debris owing to centuries of weathering, erosion, war as well as historical changes. A major concern of the institutions with preservation is the repeated manual repair of the relics. In order to solve the problem of appropriate reconstruction, since 2001 Visualization Technology Institute, supported by China's Ministry of Science and Technology, NSFC, and China's Ministry of Education, has conducted extensive research on digitalized virtual restoration of damaged relics by using graphics, virtual reality, and visualization technique. This research not only accelerates the speed of relic restoration but also reduces the damage to relics during repair process.

Many foreign experts including Prof. A. Cerepi and Dr. Daim from France and Austria have been invited with the cooperation of Chinese research group. Due to the commitment of both sides, they have achieved a major breakthrough in the methods of contour line extraction and free match, realized shape based curve matching through vector space transform, and eventually developed a computer-aided relic restoration system. It provides a foundation of relic restoration, repair and simulation and also breaks a new frontier of cultural relic restoration.

5. Joint Programs of Resources, Environmental and Social Development in Western China

Northwest University has made significant progress in the Qinling golden snub-nosed monkey (*Rhinopithecus roxellana*) study. The Qinling Snub-Nosed Monkey Research Center of Northwest University has been cooperating with Primate Research Institute of Kyoto University and Santiago Zoological Society for more than ten years. The studies were conducted in ecological and behavioral aspects of the species. Basing on field observations, the researchers have confirmed the social structure, foraging behavior and time budget.

As far back as in 1992, the German Korad Adenaur Foundation and the School of Economics and Management of Northwest University jointly set up the Chinese German Management Institute to encourage the economic development in Western China. Starting from the founding day, the experts of the Institute have developed some key research programs such as "Study of SMEs (Small- and Medium-Sized Enterprises) Environmental Pollution in Northwestern China", "The Comparative Study on Sino-German SMEs Starts-up" with the financial help of German Korad Adenaur Foundation. Through the continuous study of the enterprises, especially small and medium sized ones, the Institute focuses on solving the utilitarian problems faced by them in the northwest of China. As a result, they published papers and articles and fostered enterprise management experts. Furthermore, they have not only enriched and developed the theories concerning small- and medium-sized enterprises but also promoted the development of the enterprises. After 2004, the European Studies Center and American Ford Foundation have invested several times in the Study on Relative Policies of Sustainable Development in Northwestern China. Besides, the research capacity regarding this topic has been enhanced because of staff

exchanges and academic communications among Northwest University and its international partner institutes.

International Collaborative Research is time-, energy-, and resource-consuming. What factors contribute to a fruitful and sustainable cooperation? From my perspective, there are mainly three.

First of all, mutually beneficial resources and common interests serve as a precondition.

Among all the disciplines of Northwest University, History, Archaeology, Geology, Life Sciences, Economics, and Chemistry enjoy strong academic strengths. The past experience indicates that strong disciplines are more favored by international collaborative research.

I would like to take Archaeology as an instance. Thanks to the accumulation of academic achievements in the long run and profound historical resources, the discipline is excellent in archaeological studies of Zhou, Qin, Han and Tang Dynasties and of the western regions of China. This excellence brings more opportunities for joint research. For example, in April 2004, the Historical Museum of my university collected and preserved the Epitaph for Ino Manari, one of the Diplomats to Tang Dynasty (Kentoushi). It is the earliest epitaph of international students from Japan in Tang Dynasty, and also one of the earliest stone tablets in which the nation's name was inscribed. Therefore, the announcement triggered an upsurge among Chinese and Japanese scholars on the study of the tradition of Chinese-Japanese friendship. Furthermore, Northwest University jointly organized four academic workshops with Japanese counterparts and published a collection of academic research papers.

Secondly, scientific innovation serves as the basic driving force.

Joint research requires helps to tackle major academic issues and enriches scholar's perspectives. For instance, after understanding the origin and evolution of typical animals, Professor Shu Degan is very interested in the historical interactions between physical earth and organisms. Fortunately, Professor Shigenori Maruyama of Tokyo Institute of Technology and Kinya Yasui of Hiroshima University of Japan also shows interest in this topic. Consequently, the Early Life Institute led by Professor Shu and the group of Professor Shigenori Maruyama began the challenging cooperation in terms of "the Evolution of Life and Environments: from Snowball to the Phanerozoic Earth Records in South China".

Thirdly, fostering innovative talents secures its sustainability.

It has been widely accepted at Northwest University that fostering innovative talents to participate in the research projects is of crucial importance for international cooperative research. The cooperation between the Ford Foundation in America and the European Union with Northwest University on economic development in Western China has set a brilliant model. Theory and methodology are regarded as tremendously important in carrying out the cooperative program. Accordingly, both parties have realized that it is necessary to offer training on research methodology to their staff. The European Studies Center has provided a project funding of 388, 700 Euros to support researchers to conduct studies on the policies of sustainable

development in Western China. They can take courses in Europe such as Regional Economic Development and Social Policies Studies. The Ford Foundation has also allocated funding to improve the joint research ability of our staff.

Due to the joint research projects, a group of innovative talents with international perspectives have emerged. For instance, Zhang Xingliang and Hua Hong stand out among the gifted young scholars in the study of early life evolution. Zhang Xingliang has published more than 20 papers on Cambrian Explosion in the international geological journal. He was selected for the Outstanding Talents Project in 2005 by the Ministry of Education. Hua Hong has not only made the discovery of the biomineralization and asexual reproduction of Cloudin, the tubular metazoan fossil but also revealed the complete biological transfer from organic tube layers to crypto-microgained. This provides important proving material for the biomineralization of metazoan. Benefiting from international joint research, these innovative talents will in turn promote the joint research and secure its sustainability.

In conclusion, to achieve international cooperative research, we need to identify mutually beneficial resources and common interests, aim at tech-innovation and pay much attention to nurture talent.

The location of Northwest University, in the former ancient Chang'an city and Guan Zhong plain in Western China, might not enjoy the same advantages associated with the coastal areas. However, being the cradle of the Chinese civilization and the starting point of the Ancient Silk Road, this place is outstanding and prominent in its rich cultural and sci-tech resources, and waiting to be jointly explored.

Advantages, Cooperation and Innovation

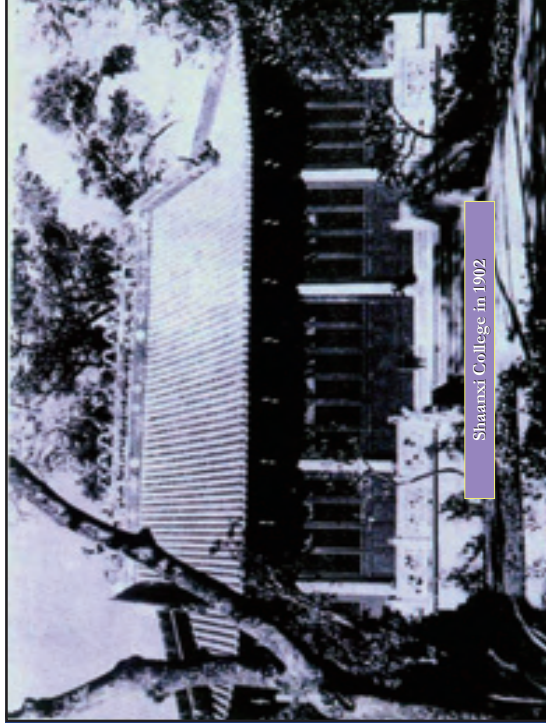
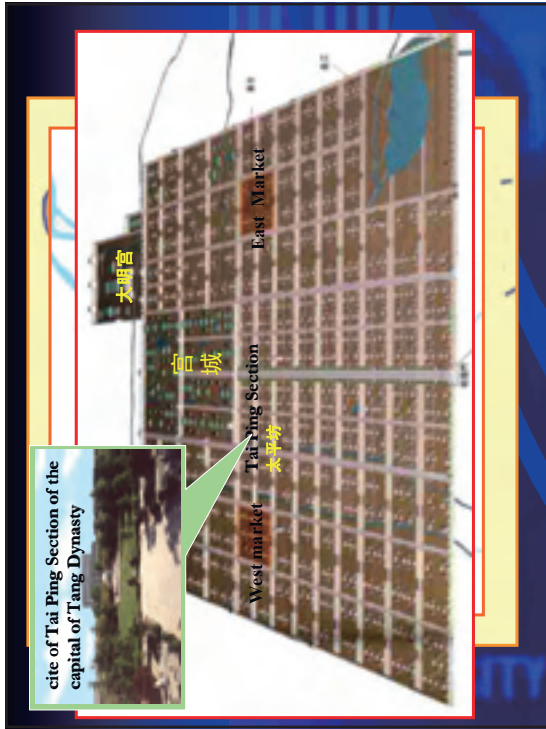
Vice-president, Prof. Fang Guanghua
Northwest University, P. R. China

Abstract

- a brief overview
- some ongoing international collaborative research projects
- three contributing factors in successful joint projects

Northwest University is located in the original historical cite of Tai Ping Section of the capital of Tang Dynasty. It was founded as Shaanxi College in 1902, and now is one of the comprehensive universities in Western China.

A Brief Overview



The university covers an area of 370 acres, consists of 24 schools and departments and 16 research institutes. There are over 2,300 faculty and staff members, including 1,230 full-time teachers. There are 22,000 students, including 5,500 doctoral, graduate students and 600 international students.



Between 2001 and 2006, 14 major international cooperative projects have been undertaken, 42 international workshops and conferences held, 710 experts invited to deliver lectures and conduct research on campus, and over 300 promising mid-career faculty members sent to foreign partners for collaborative research.



president of Northwest Univ. and president of Ecole Normale Supérieure in Paris



president of Northwest Univ. China and president of Northwest Univ. USA



Some Ongoing International Collaborative Research Projects

Regarding the 14 international collaborative research projects, I'd like to highlight the following three:

1. Joint Research in Early Life Evolution

The Early Life Evolution Research Team headed by Prof. Shu Degan of the Geology Department, has cooperated productively with partners.

For example, the collaboration with Prof. Simon Conway Morris from Cambridge University, also a Member of British Royal Academy, has proven to be very successful.

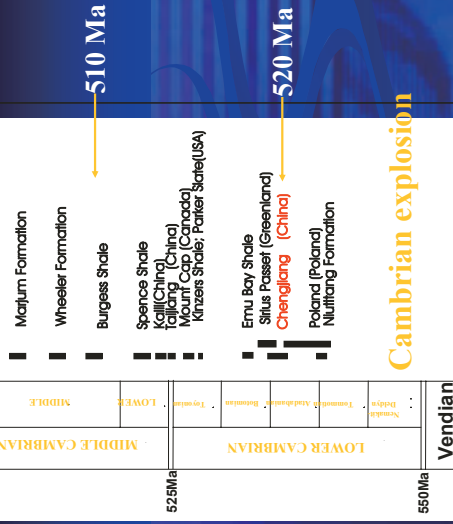
布尔吉斯页岩动物群



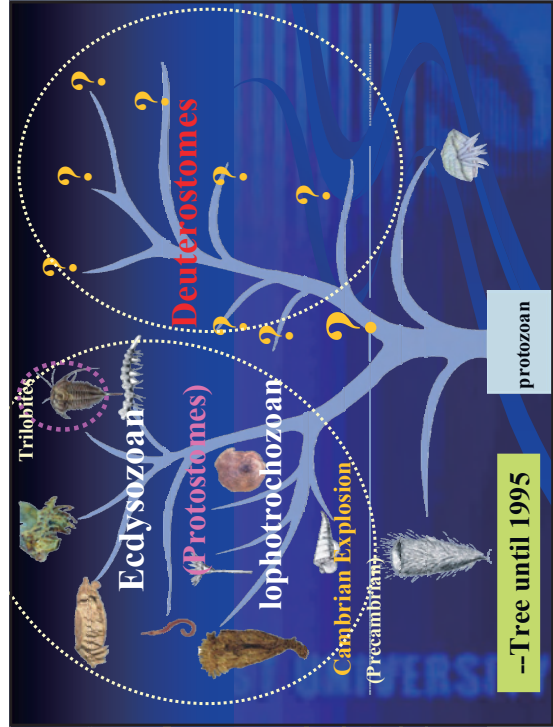
10 papers yielded from the joint research in the field of Early Evolution of Deuterostomia have been published in *Nature* and *Science*.

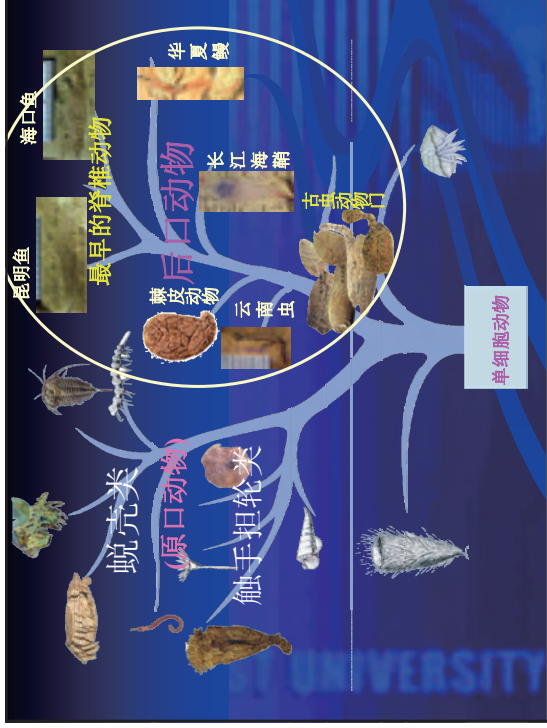
Their collaborative research set up the most complete Phylogeny of Deuterostomia till now and constructed the Animal tree of Cambrian Explosion.

Fossils date of cambrian explosion



Cambrian explosion





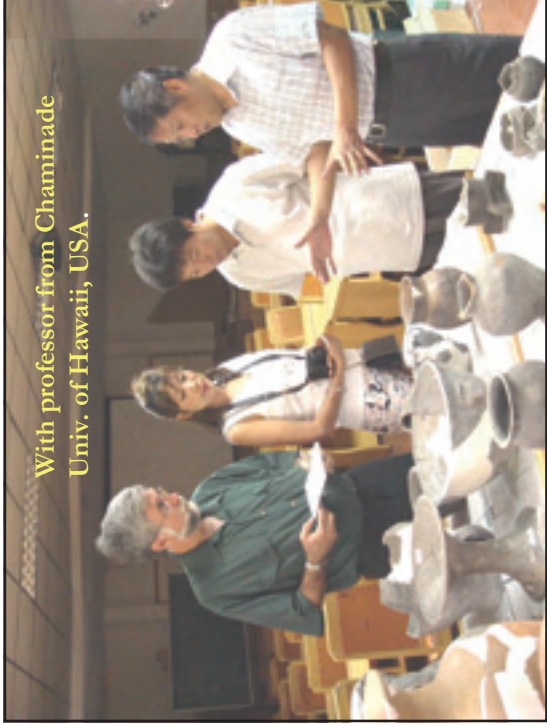
2. Archaeological Research of the Ancient Silk Road

Founded in 1956, The Department of Archaeology of Northwest University is one of the oldest in China.

Situated at the starting point of the ancient Silk Road—Chang'an, It enjoys the geographical advantage to carry out the Archaeological Study of the Silk Road.



At present, the Department has established academic exchange relationships with universities and research institutions from over 10 countries. Hundreds of scholars and experts from the foreign partners visited and delivered speeches at the Department. More than 20 International students have successfully completed their degree or non-degree study in the Department.



Between 2001 and 2006, The joint research projects on the ancient Silk Road with foreign partners are as follows:



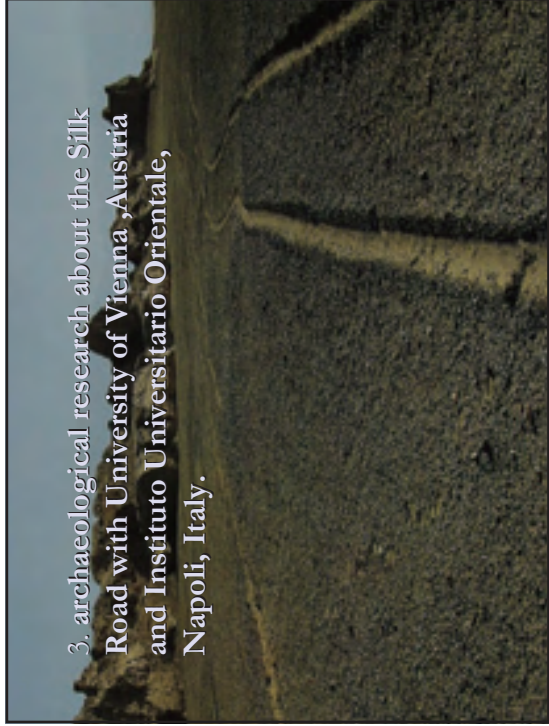
1. on Historic Remains of Ancient Buddhism in Shaanxi, China with Tokyo Research Institute of Culture Properties.

2. on the protection program of the Emperors' Mausoleum Stone Carving of Tang Dynasty with Tokyo Research Institute of Culture Properties;

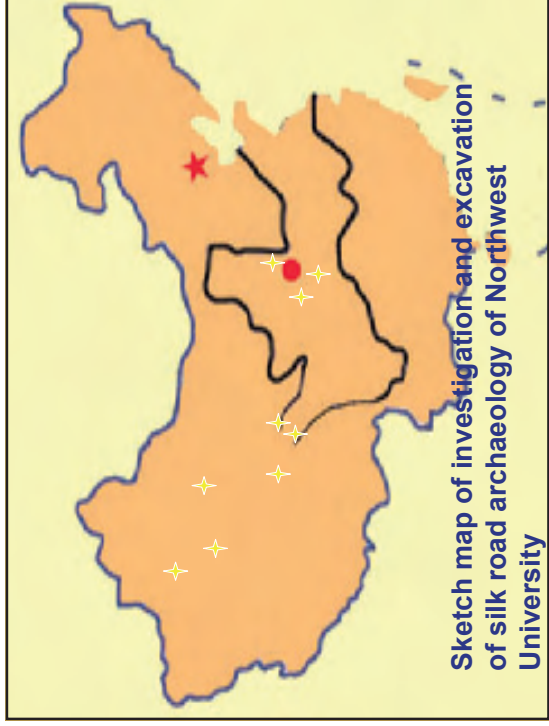


张炜与日中友好协会会长平山郁夫

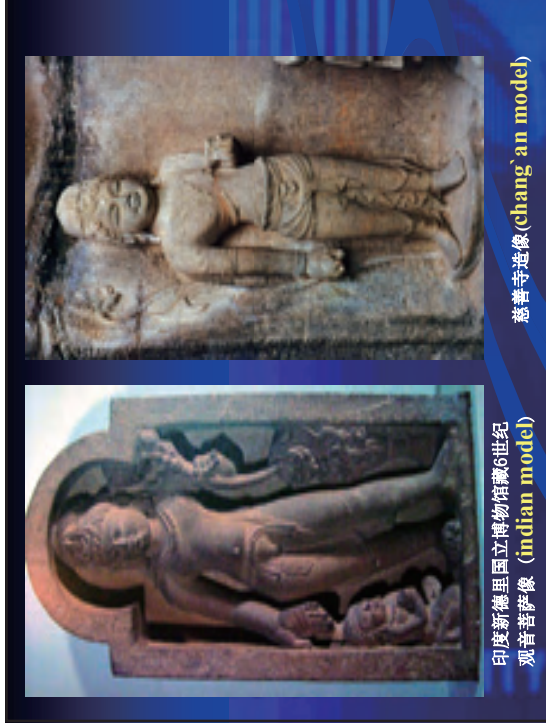
3. archaeological research about the Silk Road with University of Vienna, Austria and Istituto Universitario Orientale, Napoli, Italy.



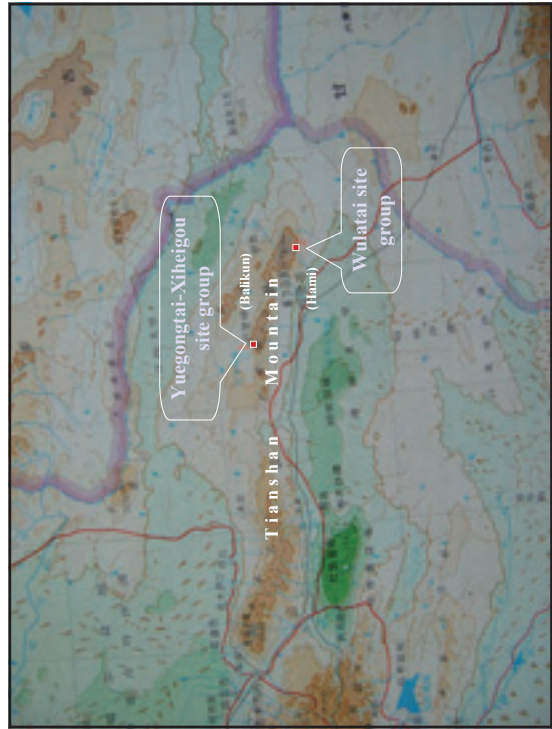
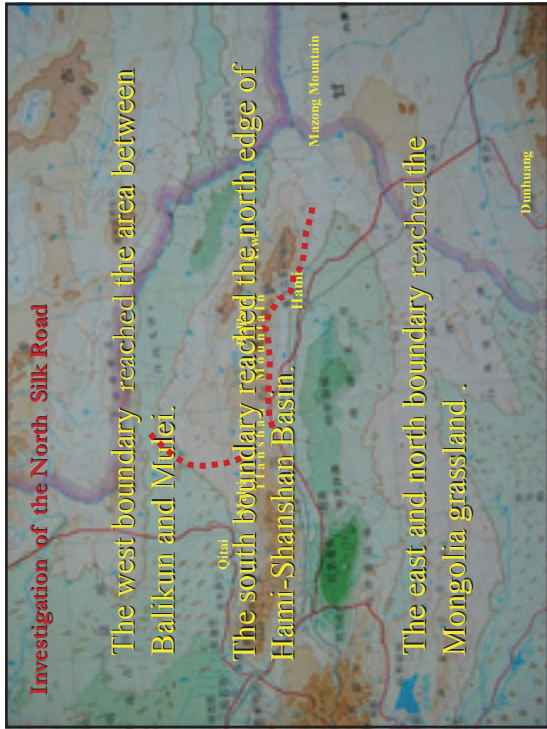
Sketch map of investigation and excavation of silk road archaeology of Northwest University



Through the above-mentioned joint projects, the similarities and differences between the Buddha molding methods in different times and places have been studied.



From the research in areas between the northwest of Gansu and the east of Xinjiang, dozens of nomadic sites along the silk road have excavated, and some essence of ancient silk road culture explored.

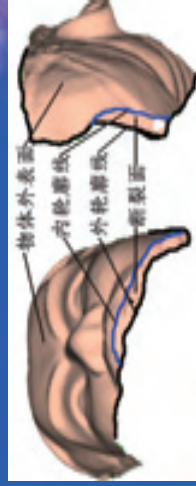


3. Joint Research Program of Digitalized Virtual Restoration of Damaged Relics

China is a nation abundant in relics. Most valuable relics are pottery, porcelain, bronze, terra cotta. Unfortunately, a considerable number of them have become fragments or debris. A major Method that preserve relics is the repeated manual repair of the relics.

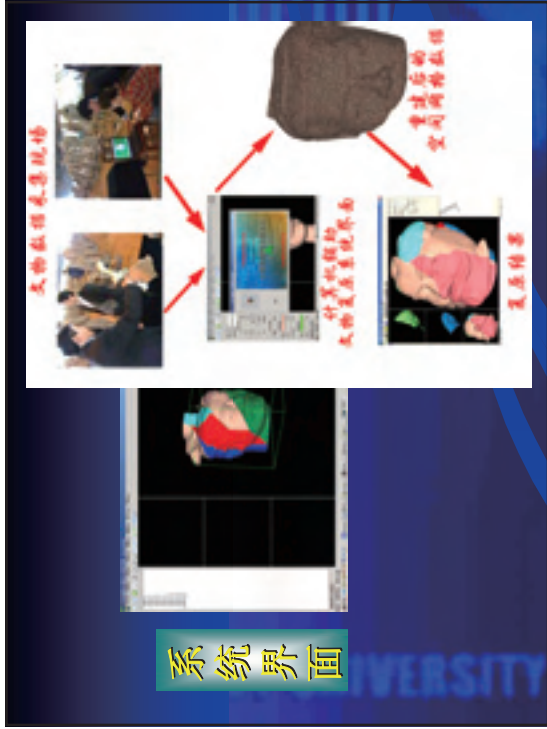
In order to accelerate the speed of relic restoration and reduce the damage for relics during repair process, Visualization Technology Institute of Northwest University has conducted extensive research on digitalized virtual restoration of damaged relics using computer graphics, virtual reality, visualization technique.

It is difficult to bring about the contour line extraction and free match ,realized shape based curve matching through vector space transformation for relics.



Many foreign experts were invited with the cooperation of Chinese research group, including Prof. Cerepi, Dr. Daim from France and Austria.

Due to the engagement of both sides, the research group developed a computer aided relic restoration system. It provides a foundation of relic restoration, repair and simulation and also breaks a new frontier of cultural relic restoration.



Three Contributing Factors In Successful Joint Projects

International Collaborative Research is time-, energy- and resource-consuming. What factors contribute to a fruitful and sustainable cooperation?

First of all, mutually beneficial resources and common interests serve as a precondition.

Among all the disciplines of Northwest University, History, Archeology, Geology, Life Sciences, Economics and Chemistry enjoy strong academic strengths. The past indicates that strong disciplines are more favored by international collaborative research.

I would like to take Archeology as an instance. Thanks to the accumulation of academic achievements in the long run and profound historical resources, the Archeological discipline is excellent in archeological studies of Zhou, Qin, Han and Tang Dynasty and of the Western China. This excellence brings more opportunities for joint research.

For example, in April 2004, the Historical Museum of my university collected and preserved the Epitaph for 井真成. It is the earliest epitaph of the Diplomat to the Tang Dynasty (Kentoushi) unearthed till now, and also one of the earliest stone tablets in which the nation's name Japan is inscribed.

The Epitaph for 井真成, collected by the Historical Museum of Northwest university



stone tablets

墓主志銘文：

共一百二十七字，分十二行。

贈尚衣奉御井公墓志文 并序

公姓井字真成國号日本才称天纵故能

□ 命近邦驰骋上国蹈礼乐袞衣冠京帶

□ 朝难与倚矣昌图强学不倦闻道未终

□ 遇移舟屢逢奔駟以开元廿二年正月

□ 日乃终于官第春秋卅六 卓上

□ 伤追崇有典 诏贈尚衣奉御葬令官

□ 即以其年二月四日窆于万年县澁水

□ 原礼也嗚呼素车路引丹旌行哀嗟远

□ 兮額響日捐穷郊兮悲夜台其辭曰

□ 乃天常哀茲远方形既埋于阜土魂庶

归于故乡

The announcement triggers an upsurge among Chinese and Japanese scholars on the study of tradition of Chinese-Japanese friendship. Under the said theme, Northwest University jointly organized 4 academic workshops with Japanese scholars, and published a collection of academic research papers.

Secondly, scientific innovation serves as the basic driving force.

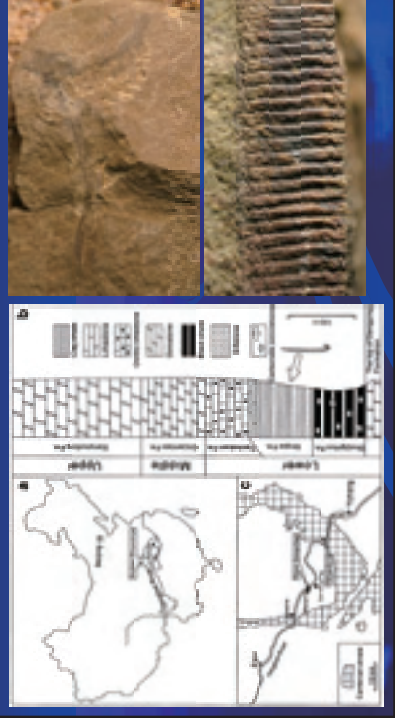


Joint research that helps to tackle major academic issues and enriches scholars' perspectives can always endure.

For example, after understanding the origin and evolution of animals of Cambrian Explosion, Professor Shu is very interested in historical interactions between physical earth and organisms.

Fortunately, Professor Shigenori Maruyama of Tokyo Institute of Technology and Kinya Yasui of Hiroshima University of Japan also shows interest in this topic . Consequently the group led by professor Shu and the group of Professor Shigenori Maruyama began the challenging cooperation about “Co-evolution of Life and Environments: From the Records in South China” .

Soft-bodied fossils from the Cambrian of the Three-gorge area
躯体化石在三峡地区寒武纪地层中的发现



Thirdly, fostering innovative talents secures its sustainability

It has been widely accepted at Northwest University that fostering innovative talents who participate in the research projects is of crucial importance to international cooperative research.

Those innovative talents have emerged due to the joint research projects will in turn promote the joint research and secure its sustainability.

In conclusion, to achieve international cooperative research, we need to identify mutually beneficial resources and common interests, aim at tech-innovation and pay much attention to nurture talent.

The location of Northwest University, in the former ancient Chang'an city, being the cradle of Chinese civilization and the starting point of the Ancient Silk Road, is outstanding in its rich cultural and sci-tech resources, waiting to be jointly explored.

Now, on behalf of Northwest University, I would like to extend warmest invitation to visit my university to all scholars!
Thank you.

西北大学

Toward Engineering Educational Leader via Active and Sustainable International Research Collaboration

Direk Lavansiri and Tawatchai Charinpanitkul

Faculty of Engineering, CHULALONGKORN University

Payathai Rd., Patumwan, Bangkok 10330

THAILAND

ABSTRACT

New challenging ways toward leadership development have been formulated with an objective of sustainable growth of engineering education in not only domestic but also global level. Faculty of Engineering, CHILALONGKORN University has tried to establish challenging attitudes which are required for achievement of development of new generation of engineers with engineer excellence. It is an important issue that the outcome-based management would be undertaken to ensure sustainable development in collaborative research works. Moreover, mutual benefits among each stakeholder involving in the global engineering education will essentially play an important role in our brighter future.

Keywords : Engineering Education, Collaborative research, International Collaboration

90th Anniversary of Chulalongkorn University



Toward Engineering Educational Leader via Active and Sustainable International Research Collaboration

Direk Lavansiri and Tawatchai Charinpanitkul
 Faculty of Engineering
 CHULALONGKORN University

90th Anniversary of Chulalongkorn University



Overview

- Vision and Mission of CU
- Vision, Mission and Core Value of F.Eng.
- Present status of F.Eng.
- Roadmap and Strategic Clusters toward Engineering Educational Leader
- Summary

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Vision and Mission of CU

90th Anniversary of Chulalongkorn University



CHULALONGKORN UNIVERSITY

- Established in the year of 1917, by King Vajiravudh, (King Rama VI)
- Present status
 - 18 Faculties
 - 3 Affiliated Institutions
 - 3 Colleges
 - 11 Institutes
 - Totally 132 Departments



90th Anniversary of Chulalongkorn University

CHULALONGKORN UNIVERSITY

- **Present Status**

Degree	Faculty members		Students (Last updated September 2005)		Graduates	
	amount	%	amount	%	amount	%
Bachelor Degree	156	5	20,258	62	3,816	50
Graduate Diploma	-	-	329	1	326	3
Master Degree	1,300	46	10,110	31	3,238	42
Higher graduate diploma	-	-	313	1	140	2
Doctoral Degree	1,376	49	1,450	4	190	2
Total	2,852	100	32,460	100	6,620	100

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CHULALONGKORN UNIVERSITY

- **The Century Policy of Chulalongkorn University**

- To be a knowledge and reference resource
- To improve and develop Thai human resources to be a sustainable, internationally competent, and collaborative society
- To combine research works to academic works, concentrating in extending fundamental and applied knowledge

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CHULALONGKORN UNIVERSITY

- **Mission of Chulalongkorn University**

- To produce internationally competent, and socially compatible students
- To develop moral and leadership
- To explore fundamental and advance knowledge beneficial to Thai society
- To transfer and apply available knowledge into public knowledge, making Thai an internationally sustainable society

90th Anniversary of Chulalongkorn University

CHULALONGKORN UNIVERSITY

- **Mission of Chulalongkorn University**

- To transfer and apply available knowledge into public knowledge, making Thai an internationally sustainable society
- To conserve, and carry on the beauty of Thai Tradition and Culture.



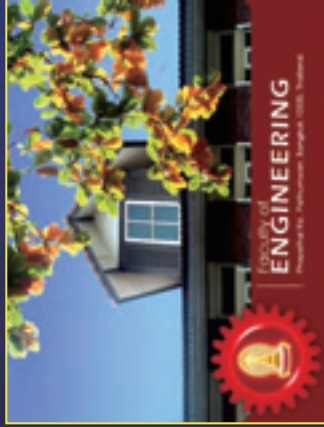

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Vision, Mission and Core Value of F.Eng.



90th Anniversary of Chulalongkorn University



FACULTY OF ENGINEERING

90th Anniversary of Chulalongkorn University

FACULTY OF ENGINEERING

- Established on 1 June 1913, by King Vajiruvudh (Rama VI)
- Merged into Chulalongkorn University in 1916
- Recognized as the "Faculty of Engineering" under CU since then






90th Anniversary of Chulalongkorn University

FACULTY OF ENGINEERING

Missions, Vision, and Values

- The faculty's Vision is "Commitment to Engineering Excellence in Asia"
- Goal "Commitment to the production of high-caliber graduates and academic excellence in Engineering"

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FACULTY OF ENGINEERING

Missions, Vision, and Values

Mission Statements

1. To produce world-class engineers, equipped with required skills and suitable for society
2. To instill ethics in its graduates to be responsible leaders of the society
3. To innovate engineering technologies and integrate various bodies of knowledge for the benefit of Thai society




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FACULTY OF ENGINEERING

Missions, Vision, and Values

- **Mission Statements**
 4. To transfer knowledge to the public in an effort to improve Thai society, leading to self-sufficiency in the global community
 5. To uphold and disseminate Thai arts and culture




90th Anniversary of Chulalongkorn University

FACULTY OF ENGINEERING

Missions, Vision, and Values

- **Values: Core values "LEADERS"**
 - L**eadership
 - E**xcellence
 - A**ccountability
 - D**iscovery
 - E**thics / team / happy
 - R**elevancy
 - S**ystem (SOTUS)





90th Anniversary of Chulalongkorn University

Present status of F.Eng.





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FACULTY OF ENGINEERING



Stakeholder Perspective	Internal Process Perspective
Financial Perspective	Learning and Growth Perspective

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FACULTY OF ENGINEERING

Strategic Plans

- **Stakeholder Perspective**
 - Nationally and internationally accepted academic excellence
 - Student ability accepted at national level and corresponding to international standard




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FACULTY OF ENGINEERING

Strategic Plans

- **International Process Perspective**
 - Research and teaching activities development
 - Proactive Public relations
 - Academic and extracurricular activity, enhancing student's morality and ability




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FACULTY OF ENGINEERING

Strategic Plans

- **Learning and Growth Perspective**
 - Information system development
 - Physical system and supporting resource development
 - Support staff and faculty members development



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FACULTY OF ENGINEERING

Strategic Plans

- **Financial Perspective**
 - Revenue increase
 - Cost reduction



90th Anniversary of Chulalongkorn University

FACULTY OF ENGINEERING

International Collaborations

- **Faculty of Engineering is engaged in international collaborations with universities and organizations worldwide, including**
 - Massachusetts Institute of Technology (USA)
 - University of Maryland, College Park (USA)
 - Oregon State University (USA)
 - Weldinf Institute SLV Munich (Germany)
 - Warsaw Univ. of Technology (Poland)
 - Slovak Univ. of Technology (Slovak Republic)

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FACULTY OF ENGINEERING

International Collaborations

- Beijing University (China)
- Tsing Hau University (China)
- Univ. of Tokyo (Japan)
- Tokyo Inst. of Tech. (Japan)
- Saitama University (Japan)
- Queensland Univ. (Australia)
- Univ. of Canterbury (New Zealand)
- Korea Science and Engineering Foundation (Korea)




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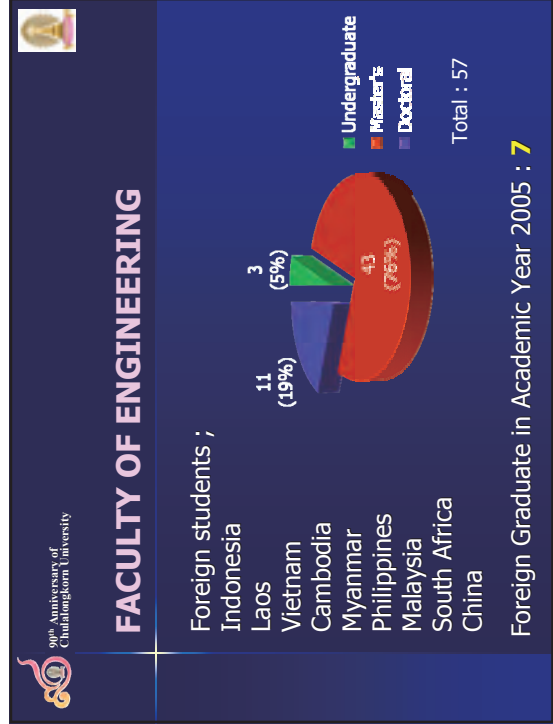
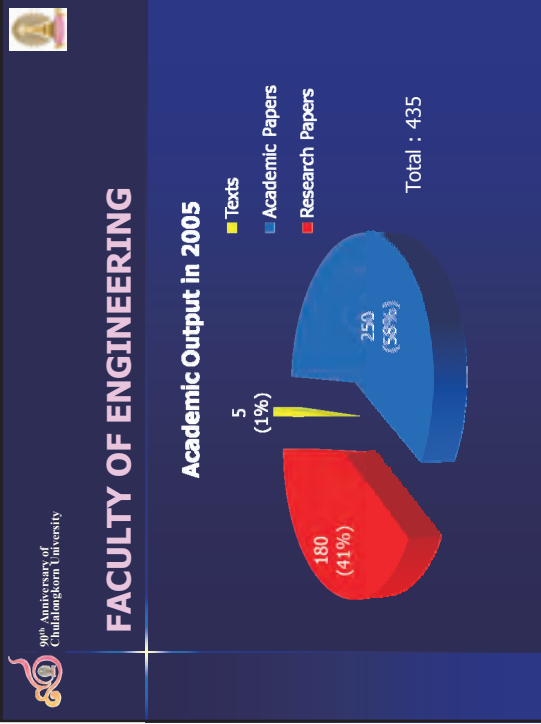
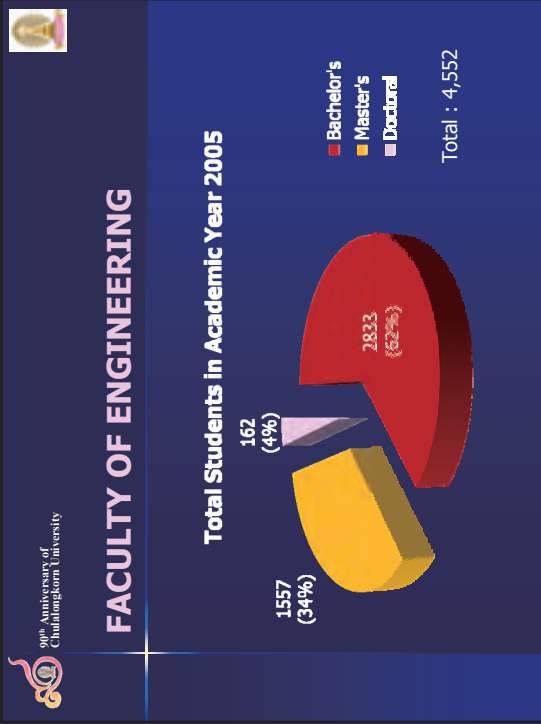
FACULTY OF ENGINEERING

Present Status

- **6 Centers of Excellence**
- **23 Research Units**
- **11 Professors**
- **85 Assoc. Professors**
- **84 Assist. Professors**
- **127 Lecturers**
- **180 Supporting Staffs**

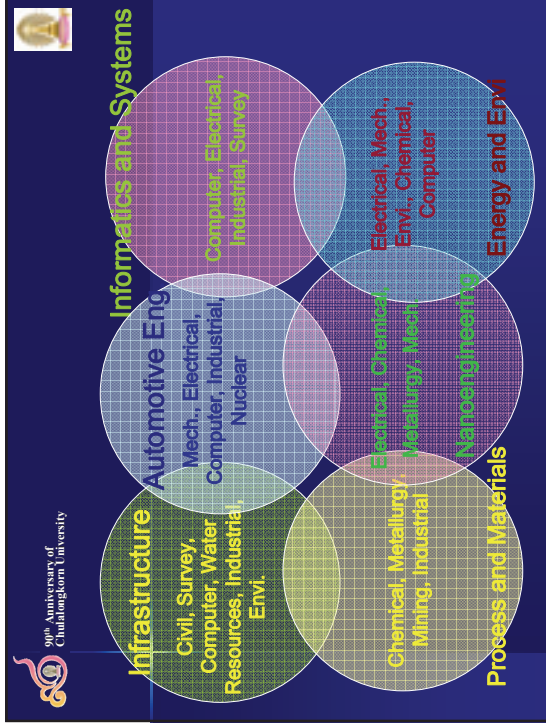
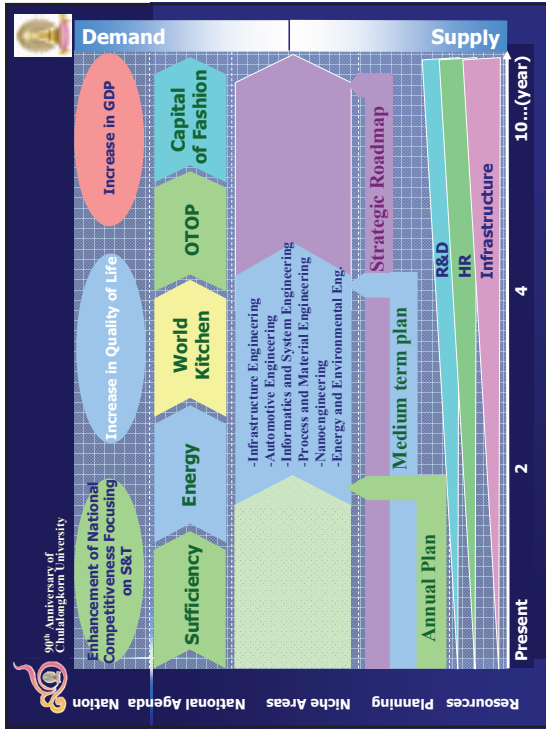


Category	Count
Professors	13
Assoc. Prof.	81
Asst. Prof.	81
Lecturers	135
Supporting	115
Admin.	119
Assoc. Prof.	-
Admin.	-
Supporting	-



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Roadmap and Strategic Clusters toward Engineering Educational Leader



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Active and Sustainable International Research Collaboration

Mutual understanding with intensive communications among researchers in Clustered Strategic Research Fields

Responding to actual needs of society with focusing points on developing high-caliber engineering graduates with new challenging attitudes

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Engineering Educational Leadership

Core Values "LEADERS"	
Leadership	Nationwide leadership in research, teaching, career, public service and upgrading of students to be well-served in leadership paths
Excellence	Commitment to excellence in academic, research and public service
Accountability	Accountability to society in their engineering practices, particularly with regard to potential impacts of their work
Discovery	Discovery and dissemination of engineering knowledge to ensure continued progress and innovations
Ethics/Team/Happy	Commitment to code of conduct, contribution to teamwork, and being happy in the course of their work
Resilience	Keeping up to date with advancements in society and the ability to adjust to changing times
System (SORUS)	Systematic performance of engineering tasks, coupled with an appreciation and implementation of SCRTS-Spink, Order, Tradition, Unity, Seniority-system



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Summary




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Summary

Challenging attitudes are required for achievement of development of new generation of engineers with engineering excellence

The outcome-based management would be undertaken to ensure sustainable development in collaborative research works

Mutual benefits among each stakeholder involving in the global engineering education will essentially play an important role in our brighter future



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THANK YOU FOR YOUR ATTENTION