Grand Challenges Scholars Program at Peking University

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Director, PKU Grand Challenge Scholars Program
Center for Water Research, College of Engineering
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✓ Among the 61 universities, PKU is the first from mainland China joining in the GCSP in October, 2017

✓ The **vision** is to have our GCSP help ensure the GC Scholars achieve a broadened education and innovative research training to address the Grand Challenges, and to educate future engineering leaders and entrepreneurs with global perspectives and social awareness.
History of Engineering Education at PKU

Imperial University of Peking

Renamed As Peking University

Merged to Tsinghua & Tianjin Univ.

College of Engineering Reestablished

Merged to COE

100th Anniversary of Engineering Branch


1910-1952, 23 academicians trained

Since 1952, 19 academicians have been trained

World-class College of Engineering
Shiyi Chen
Founding Dean of COE, PKU
President of SUSTech
Academician of Chinese Academy of Sciences

Dongxiao Zhang
Current Dean of COE, PKU
Member of the U.S. National Academy of Engineering
# Facts and Figures

<table>
<thead>
<tr>
<th>Undergraduate students</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>104</td>
<td>139</td>
<td>113</td>
<td>130</td>
<td>112</td>
</tr>
</tbody>
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| Graduate students      | 218  | 234  | 233  | 235  | 267  |

<table>
<thead>
<tr>
<th>Faculty</th>
<th>120</th>
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<tbody>
<tr>
<td>Member of Chinese Academy of Sciences</td>
<td>6</td>
</tr>
<tr>
<td>Member of Chinese Academy of Engineering</td>
<td>4</td>
</tr>
<tr>
<td>&quot;National Thousand Talents Plan&quot; Recipient</td>
<td>14</td>
</tr>
<tr>
<td>Cheung Kong Scholar</td>
<td>16</td>
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<tr>
<td>NSF Outstanding Young Researcher</td>
<td>25</td>
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<tr>
<td>MOE Trans-Century and New Century Talents</td>
<td>17</td>
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</tbody>
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World-class Researches

Develop carbon sequestration methods

Make solar energy economical

Engineer the tools of scientific discovery
Engineering Education at PKU

- Research/Creativity
- Entrepreneurship
- Global Perspective
- Multidisciplinary
- Service Learning/Social Awareness
# Understanding multidisciplinarity of engineering systems

<table>
<thead>
<tr>
<th>Sustainability</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Ethics</td>
<td>Health Care in Traditional Chinese Medicine</td>
</tr>
<tr>
<td>Environmental Issues and Policy in China</td>
<td>Health Lifestyle &amp; Communication</td>
</tr>
<tr>
<td>Environmental Evolution and Global Change</td>
<td>Taiji and Health Preserving through Chinese Characters</td>
</tr>
<tr>
<td>Global Environmental Issues</td>
<td>Earth Environment and Human Society</td>
</tr>
<tr>
<td>Our Changing Planet ......</td>
<td></td>
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<td></td>
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<tr>
<td>Security</td>
<td>Joy of Living</td>
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<tr>
<td>Security of Information System</td>
<td>System thinking about complexity</td>
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<tr>
<td>Cryptology and Cyber-Security</td>
<td>Introduction to Happiness</td>
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<tr>
<td>Financial Risk Management</td>
<td>Topics on Philosophy of Taoism</td>
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<tr>
<td>Global Communication and Society</td>
<td>Art and aesthetic</td>
</tr>
<tr>
<td>Science and Public Policy</td>
<td>Introduction to Music</td>
</tr>
<tr>
<td>Urban Infrastructure Planning</td>
<td>Shadowboxing</td>
</tr>
<tr>
<td>Cross-cultural Management ......</td>
<td>Introduction to Sun--Tzu`s Art of War ......</td>
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</tbody>
</table>
PKU Makers Lab 创客实践教育中心
CAPSTONE Design Program: Co-work on industry projects
Thesis research and summer research
Entrepreneurship

✓ Engineering World Industrial Mentors Program 工行天下导师项目
✓ Global Innovation and Entrepreneurship Center 全球创新创业中心
✓ Internship 实习
Global Study Experiences

- GLOBEX Julmester Program: over 20 universities, 350 students each year
- Global Innovation Master Project: 对话全球创新大师
- I-Podium Education Cooperation Program: 世界课堂
- International relations with over 30 world-class institutes, incl. MIT, Stanford, NUS, JHU, USC, GT, etc.
Service Learning

✓ Summer social service including tutoring activities and poverty alleviation 暑期社会实践
✓ Outreach 科普教育
GC Scholars Recruiting

- Application-Assessment System
- GPA above 3.0
- Application form (essay, recommendation letter)
- Interview by the GCSP Committee
- 15-25 scholars (20 on average per year)
Year 1: GCSP Seminar presents fundamental topics for understanding the GC and inspiring students

- Sustainability
- Security
- Health
- Joy of Living

Select one theme and mentor to apply

Year 2: Working with mentors to design the 5 competencies training

- Research
- Multidisciplinary
- Entrepreneurship
- Global Perspective
- Social Consciousness

Select 1-2 components for in-depth explore

1st Evaluation by GCSP committee

Year 3: Focus on the 1-2 competencies for high-intensity development

Component 1

Component 2

2nd Evaluation by GCSP committee

Year 4: Focus on the 1-2 competencies for high-intensity development, graduation
• **Vision of GCSP** section: paragraphs describing the school in general, and the ecosystem of the engineering education in particular.

• **Program Components** section: The activities cannot double-count.

• **GC Scholars Recruiting, Mentoring and Evaluation** section: the detailed selection criteria for scholar applicants. Appendix needed to illustrate the module of the Application and the Evaluation Forms.

• **GCSP Administration** section: to elaborate how the GC Director be selected, and the composition of the GCSP Steering Committee, possible funding sources. Use Appendix to list the proposed members of the GCSP Steering Committee.
Challenges & Solutions

• Need to be tested in practice
• How to integrate GCSP with existing activities
• How to secure financial support to GCSP mentors, scholars and relevant activities
  – Closely work with industrial partners
  – Apply for governmental support for innovative engineering education
• Inspire/motivate scholars/mentors and monitor students’ progress
  – Organize relevant competitions and workshops
  – Communicate with GCSP scholars from other schools/countries
  – Credits to mentors
For more details, visit our website:
http://en.coe.pku.edu.cn/gcsp/index.htm

Thank you!