



# **Engineering Education Accreditation in China**

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President CEEAA**

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**Kuala Lumpur, Malaysia**

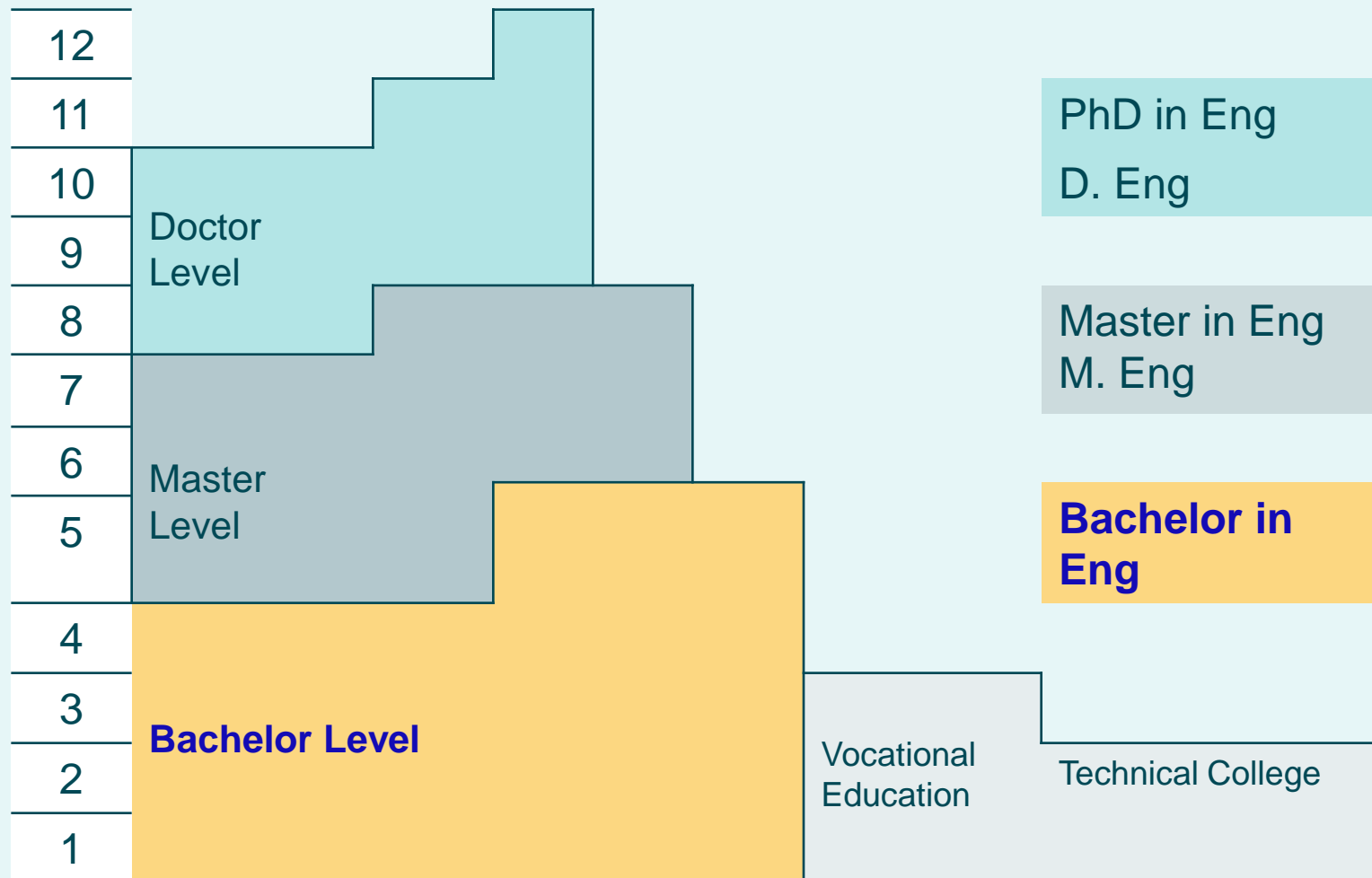


# Outline

- 1. Profiles of engineering education in China**
- 2. Development of engineering education accreditation in China**
- 3. Criteria of engineering education accreditation**
- 4. Improvement of engineering education accreditation**



# Engineering education system





# Administration

- **Management:** Under the administration of MOE, local education authorities at provincial and country levels.
- **Admission:** Apply with annual National Higher Education Entrance Examination.



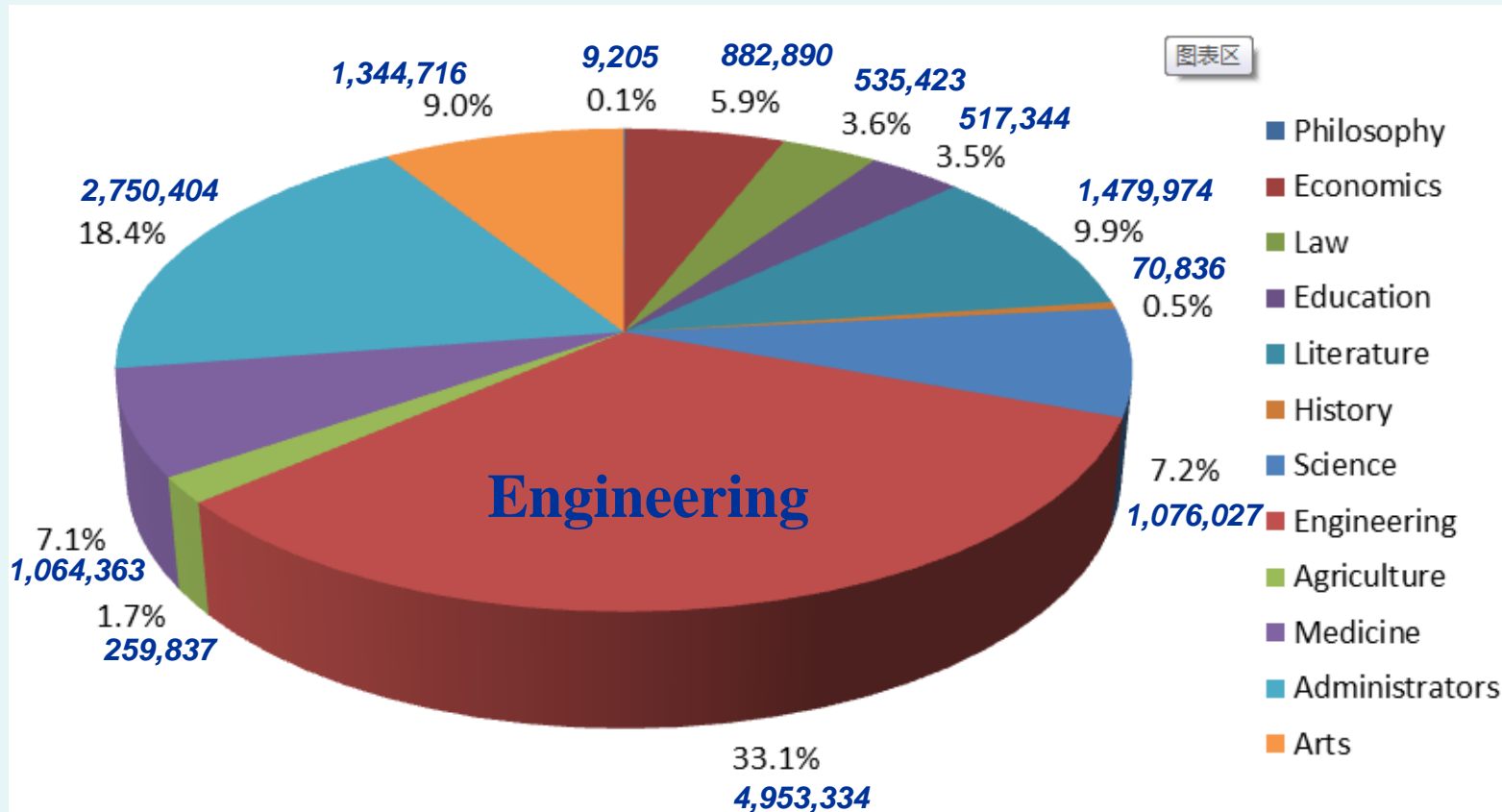
## **In the year of 2013**

- 1,170 HEIs provided bachelor's degree nationwide, among which 1,077 HEIs provided engineering programs.
- 48,922 undergraduate programs were available nationwide, among which 15,733 were engineering programs.



# Enrollment of engineering students

In undergraduate programs, the number of enrollment of engineering students reached 4,953,334, taking 33.1% of the total number.





## Undegraduate Programs in 2013

- The number of enrollment of engineering students reached 4,953,334, taking 33.1% of the total number.
- The number of engineering faculty in HEIs is 402,946.



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# Development of engineering education accreditation

- **Objectives of accreditation**
- **History of accreditation**
- **Accreditation organization system**
- **Accreditation areas and programs**
- **Accreditation procedures**
- **Accreditation evaluators**

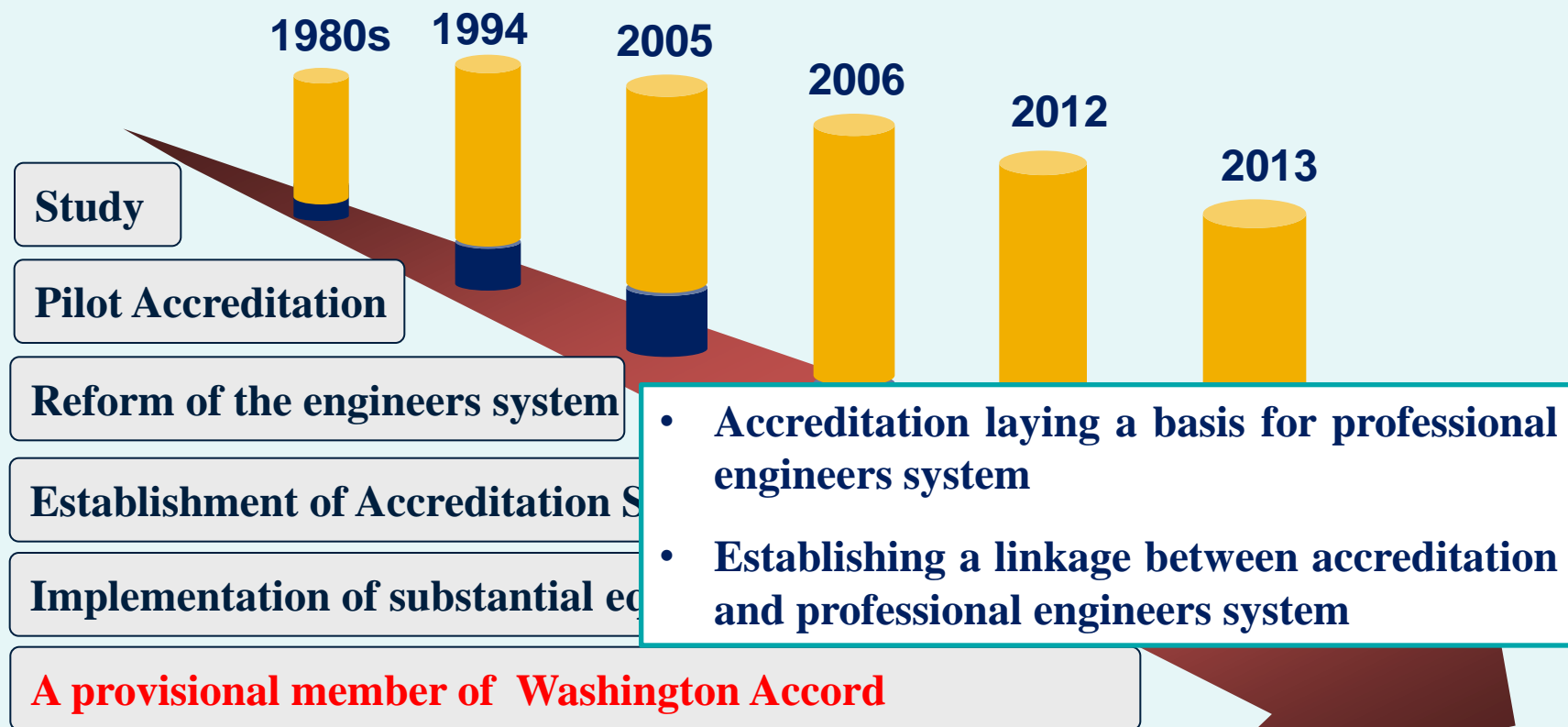


# Objectives of engineering education accreditation

- Forming a quality assurance system for engineering education;
- Establishing an engineering education accreditation system linking up with professional engineer system;
- Promoting the cooperation between engineering education and industry;
- Establishing the basis of engineer registration system;
- Promoting the international mutual recognition of engineering education and the mobility of engineers.



# History of engineering education accreditation in China





# Accreditation organization system

- Established in 2012
- Conduct accreditation independently
- Non-profit, NGO
- Authorized by MOE
- 33 associations involved

**CAST**

**CEEAA**

- CAST represents China joining Washington Accord as a provisional member.
- CAST manages and supervises its member organization, CEEAA

## Notes:

- During 2006~2012 before the establishment of CEEAA, accreditation was carried out by an organization named 'National Engineering Education Accreditation Committee'.
- The framework was similar with CEEAA, only Decision Advisory Committee was absent.
- Key officials were almost the same as those of CEEAA.

**Secretariat**



33 ASSOCIATIONS

CEEAA

中国机械工程师学会  
CHINESE MECHANICAL ENGINEERING SOCIETY



# Accreditation procedures

## *Application and Acceptance*



- *Self-evaluation*
- *Submitting Self-study Report*
- *Self-study Report Reviewing*



## *On-site Visiting*



## *Reviews and Suggestions on Accreditation Decision*



## *Maintenance of Accreditation Status*



## Accreditation evaluators

Recommended by the Program Accreditation Sub-committees to the Secretariat of CEEAA



Approved by CEEAA



Participate in CEEAA training and on-site internship



Receive training certification and assigned to evaluator team by Academic Committee

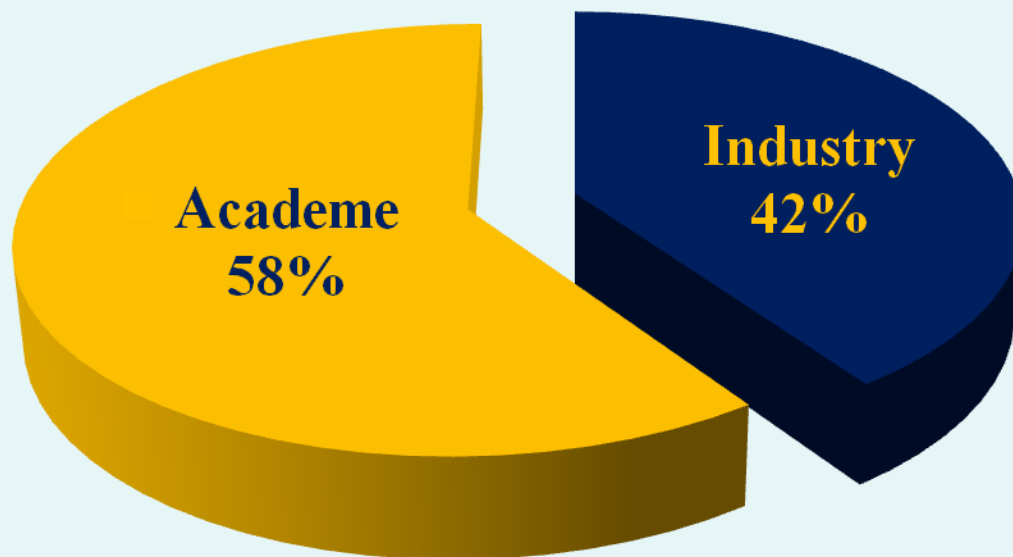


## Accreditation evaluators

**Over 600 evaluators**

**42% of them: from industry**

**58% of them: from academe**

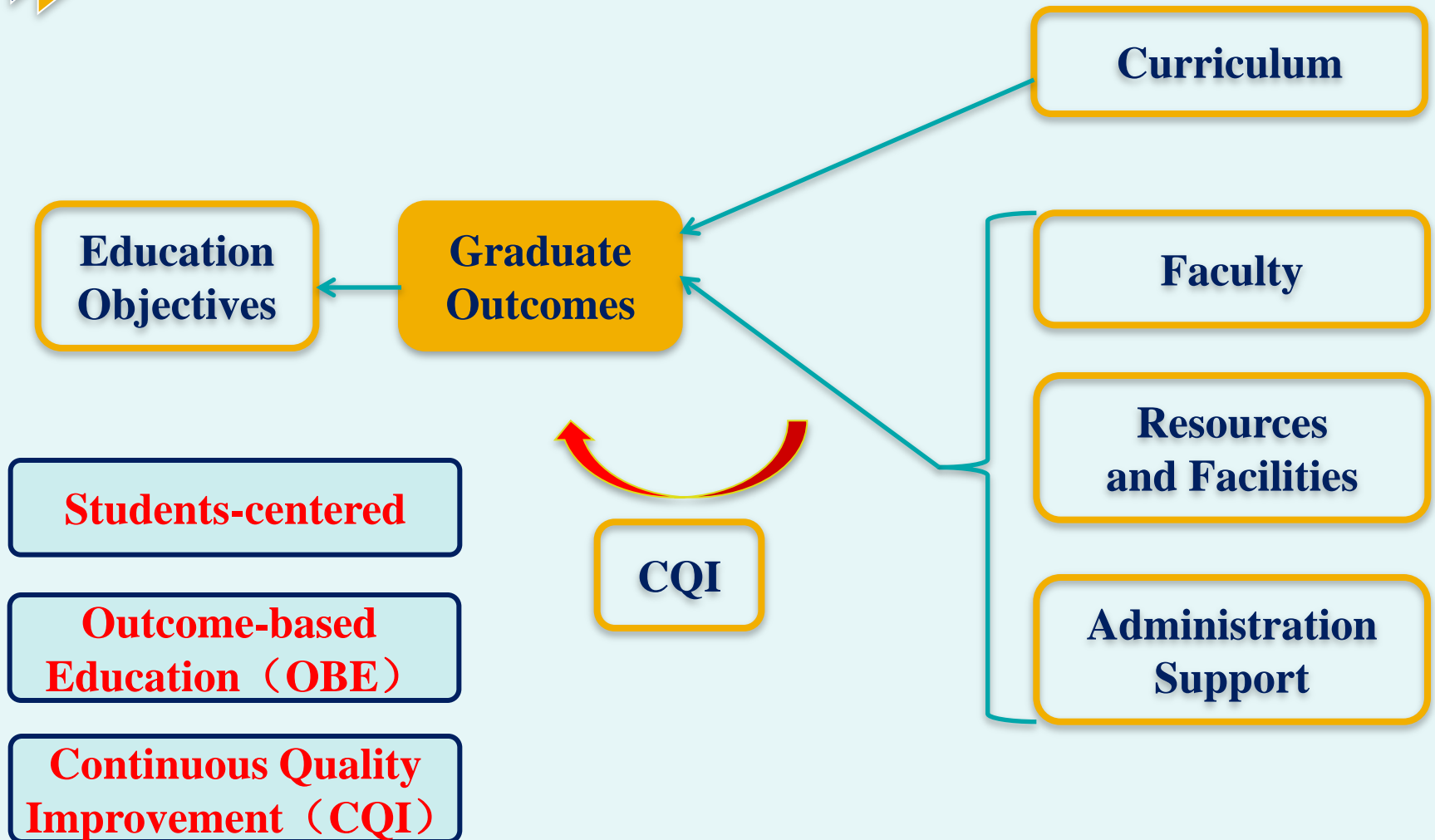




# Outline

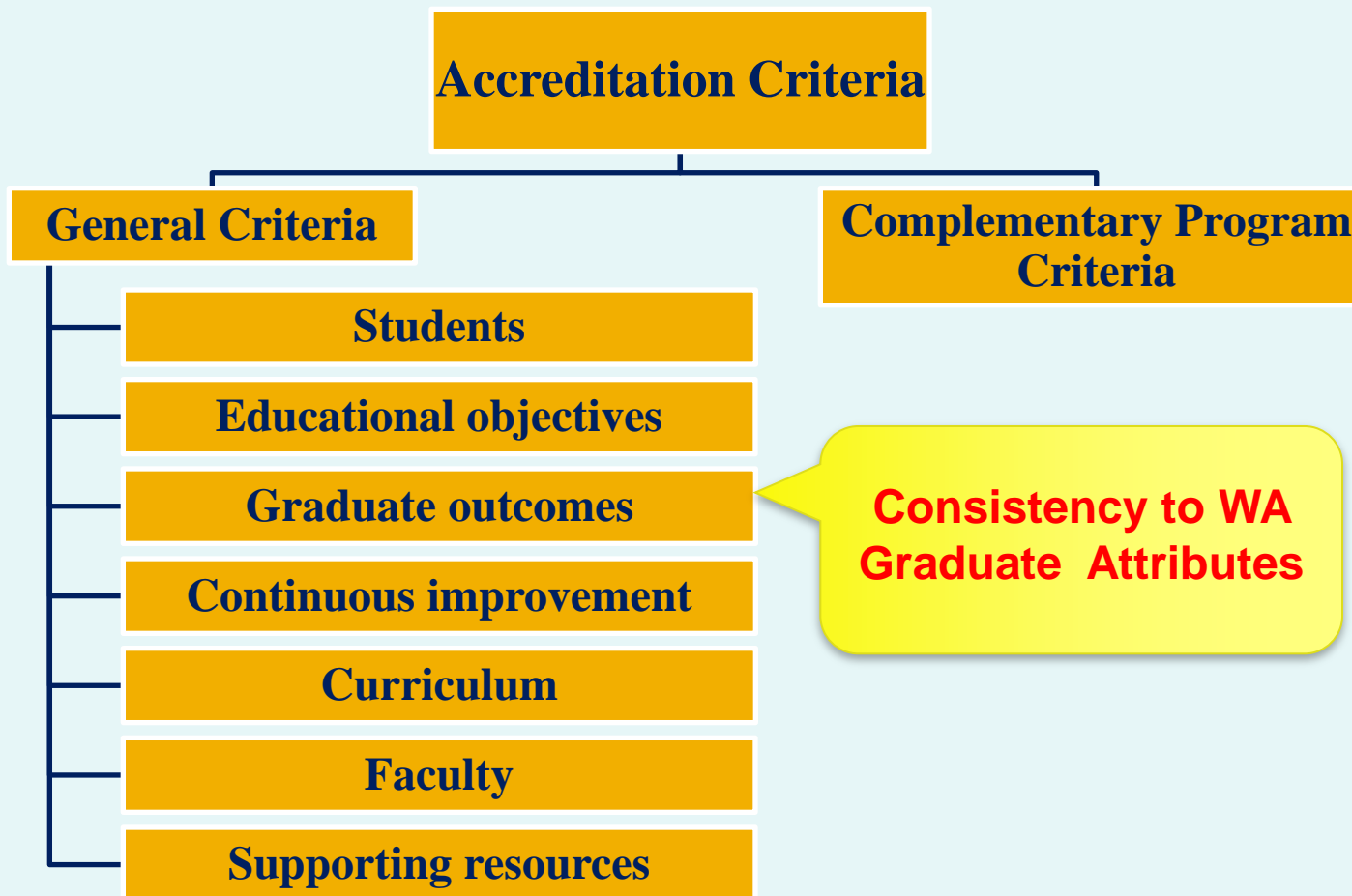
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# ► Philosophies of Criteria





# Criteria





# Criteria of WA graduate attributes, ABET, ECUK

## WA graduate attributes

1. Engineering Knowledge
2. Problem Analysis
3. Design/ development of solutions
4. Investigation
5. Modern Tool Usage
6. The Engineer and Society
7. Environment and Sustainability
8. Ethics
9. Individual and Team work
10. Communication
11. Project Management and Finance
12. Lifelong learning

## ABET student outcomes

1. Engineering Knowledge
2. Project/experiment design
3. Design/ development of solutions
4. Team work
5. Problem Analysis
6. Ethics
7. Communication
8. Engineer and Society
9. Lifelong Learning
10. Contemporary Issues
11. Modern Tool Usage

## ECUK output standards

1. Knowledge and Understanding
2. Engineering Analysis
3. Design
4. Economic, social and environmental context
5. Engineering Practice

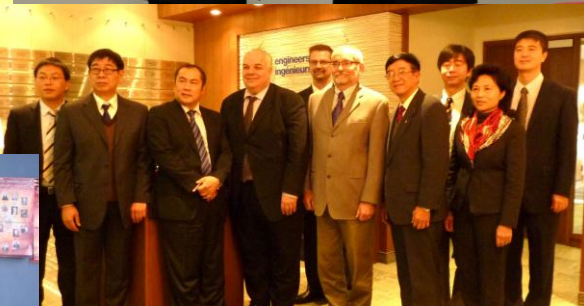
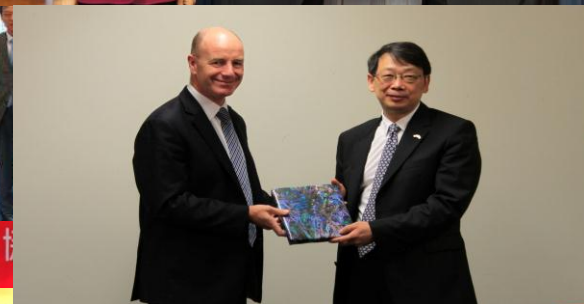
# Communications

## Visit IES (January 2013)



## Visit Engineers Ireland (May 2012)

# Communications



# Communications





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# Improvement of engineering education accreditation

- **Publicizing the concept of OBE**
- **Optimizing accreditation procedures**
- **Continuous improvement in accreditation system**

# Publicizing the concept of OBE

- ◆ Graduate attributes oriented program standard
- ◆ Outcome-Based Education (OBE)
- ◆ Continuous Quality Improvement(CQI)





## Improving the accreditation procedure

- ◆ Clarify and specify the requirements of self-study report, emphasis on ‘evidence-based’
- ◆ Strengthen the Philosophy of OBE
- ◆ Keep the consistency of accreditation
- ◆ Improve the training of peer evaluation volunteers (PEVs)



## **Improve the training of PEVs**

- ◆ **Case-study training**
- ◆ **On-site probation**
- ◆ **International exchange**



# Continuous improvement in accreditation system

- CAST
- The Board of Supervisors
- HEIs
- Society

**Management  
& Supervision**

**Information  
Feedback**

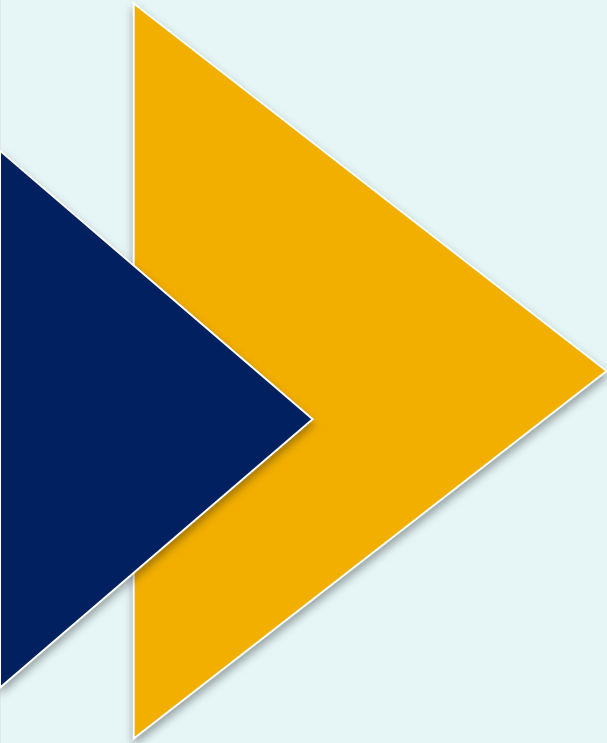
- On-site Visit
- Accreditation Organization
- Accreditation Cases

- Workshop in Tsinghua University
- Project for Excellent Engineers of MOE
- IEA conference
- ABET symposium

**Information  
Collection**

**Accreditation  
Symposiums**

- Investigate issues involving the accreditation process



# Concluding Remarks



# 100 years engineering history in China

## Jeme Tien Yow- Father of China Railway and Civil Engineering

1877-1881: Studied in Yale University (Civil and Railway engineering)

1905-1909: Chief engineering for Beijing—Zhangjiakou Railway project

Sep. 24<sup>th</sup>, 1909, Beijing-Zhangjiakou Railway opened to traffic

- ◆ China first independent design and constructed railway

Oct. 2<sup>nd</sup>, 2009, a New Beijing-Zhangjiakou Railway start to build



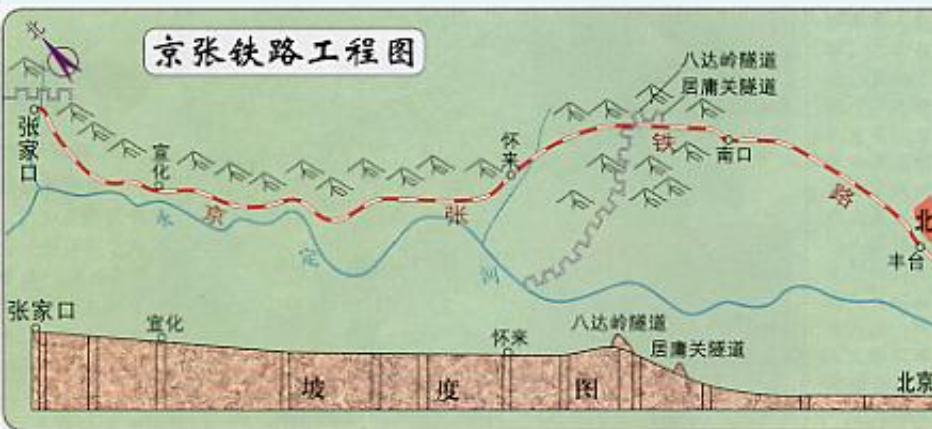
### Yesterday and today



### Opened to traffic (Sep. 24<sup>th</sup>, 1909)



### 1905-1909 Beijing-Zhangjiakou Railway Project Planning Map

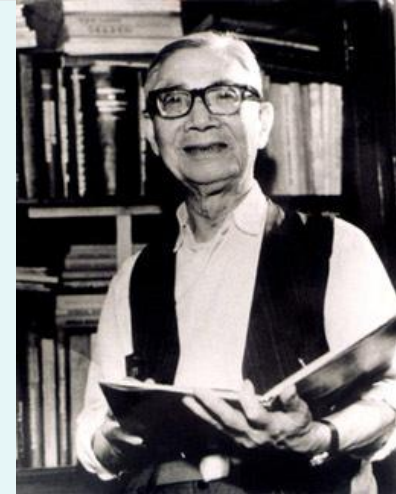




# 100 years engineering history in China

## Mao Yi-sheng – Founder of modern bridge engineering

Designing two of the most famous modern bridges in China,  
the Qiantang River Bridge near Hangzhou,  
and the Wuhan Yangtze River Bridge at Wuhan



Qiantang River Bridge near Hangzhou



Wuhan Yangtze River Bridge at Wuhan





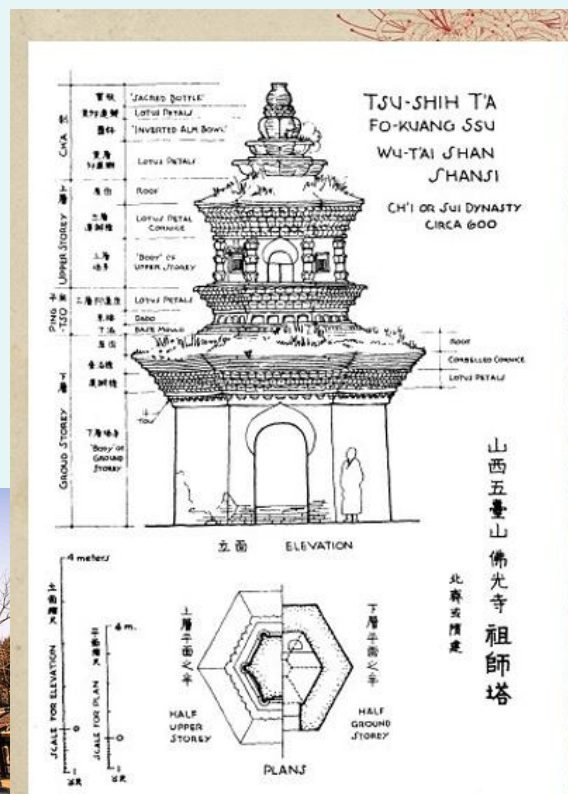
# 100 years engineering history in China



## Liang Sicheng– Father of Modern Chinese Architecture

The author of China's first modern history on Chinese architecture and founder of the Architecture Department of Northeastern University in 1928 and Tsinghua University in 1946.

The Chinese representative in the Design Board which design the United Nations Headquarters in New York.





# Remarkable Achievements in 60 years

- ◆ **Beijing – Tibet Railway**
  - ◆ Integration of Highway, Railway and Bridge technology
- ◆ **Tunneling**
  - ◆ The Cross–Harbour Tunnel, Cross-River Tunnel
- ◆ **Oil Drilling**
- ◆ **Irrigation Works – Three Gorges Project**
- ◆ **Space Technology & Manned space flight & Lunar landing program**
- ◆ **Atomic and hydrogen bombs and man- made satellites. (In 1960's)**

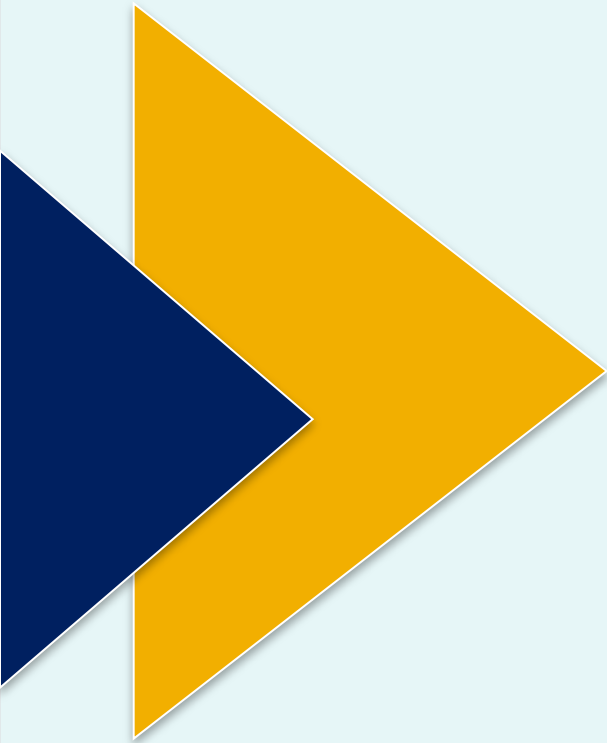




## **Our vision**

- ◆ **Maintaining the number of students in science and engineering**
- ◆ **Improving quality of engineering education**
- ◆ **Promoting engineer registration system**
- ◆ **Strengthening cooperation of engineering projects worldwide**
- ◆ **Realising Belt and Road proposal**

**Our common dream**



# Thanks!

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