ChE Master's Programs
&
Chemical Engineering Practice School
(ChEPS)

King Mongkut's University of Technology Thonburi
(KMUTT)

Roadshow Presentation for Academic Year 2022

Dr. Hong-ming Ku
Program Director

Three ChE International Master's Curricula

1. **Academic Research (AR)**

   Regular AR

   AR+ (+ = Internship)

   Monthly stipend of 3,000 Baht or 6,000 for GPAs above 3.0 and 3.5, respectively

2. **Chemical Engineering Practice School (ChEPS)**
3. **Biopharmaceutical Engineering Practice School (BioPhEPS)**

- **Both ChEPS and BioPhEPS require a short 6-month 6-credit research thesis and a 5-month 6-credit internship.**
- **AR requires a 12-credit research thesis and no internship.**
- **AR+ requires a 12-credit research thesis and a short 2.5-month 3-credit internship**

Excellence in Engineering Practice

Crucial attributes for well-rounded engineers and researchers

Core technical competency

Presentation & writing skills

Critical thinking & problem-solving skill

Teamwork, leadership, and maturity

Creativity & innovation

Service to industry, profession, and community

Learning Through Practice School

What is an Engineering Practice School?

- A new learning paradigm: "Learning by Doing"
- Practice school is one form of Work-Integrated Learning (WiL).
- Engineering curriculum with compulsory practical training

→ intensive yet practical learning

Why Practice School?

Why Engineering Practice School?

Graduating engineers possess:

- ❑ Very little hands-on experiences.
- ❑ Inadequate communication skills, particularly English.

→ Companies must invest substantial resources to re-train starting engineers.

Practice School Concept

A Unique Partnership

University

Students

Practice School

Funding Agencies

National Science ar
Technology Developı
Agency

Energy Planning and
Policy Office

Petroleum Institute of
Thailand

Industry

ChEPS (Chemical Engineering)

- A flagship Master's program in chemical engineering at KMUTT
- Modeled after M.I.T.'s David H. Koch School of Chemical Engineering Practice
- Initiated in 1997 with the following partners:
  - Academic partner: MIT
  - Industrial partners: Thai Oil Plc.

    Siam Cement Group
  - Funding agencies: Suksapattana Foundation

    Petroleum Institute of Thailand

How ChEPS Works

Student Selection	One full year of coursework	One semester of fundamental research	One semester of industrial research

Proactive Recruitment → 25 Credits at KMUTT → 6 Credits at KMUTT → 6 Credits at Industrial Sites

ChEPS Curriculum

- 2-year Master's program (30-40 students/year)
- Intensity, problem solving, and soft-skill development

SUMMER | **1st YEAR** | **2nd YEAR**

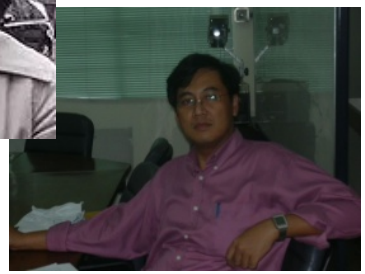
~~**Training:**~~
- ~~English~~
- ~~Simulation~~

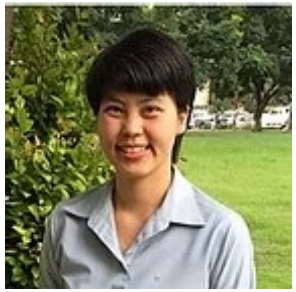
Coursework:
- Lecture
- Problem-based learning (PBL)
- Mentoring

Practice & Research:
- Practice school at sites
- Research on campus

Major Courses in 1st Year

- Modeling with MATLAB
- Applied Thermodynamics
- Applied Mathematics
- Transport Phenomena
- Process Optimization
- Process Dynamics & Control
- Petroleum Process Chemistry
- Reaction Engineering and Kinetics
- Engineering Management





Practice Sites and Research

- Thai Oil Plc. (ThaiOil)
- SCG Chemicals (e.g. TPE, ROC, SMPC)
- PTT Global Chemical Plc. (PTT-GC)

Research Projects:

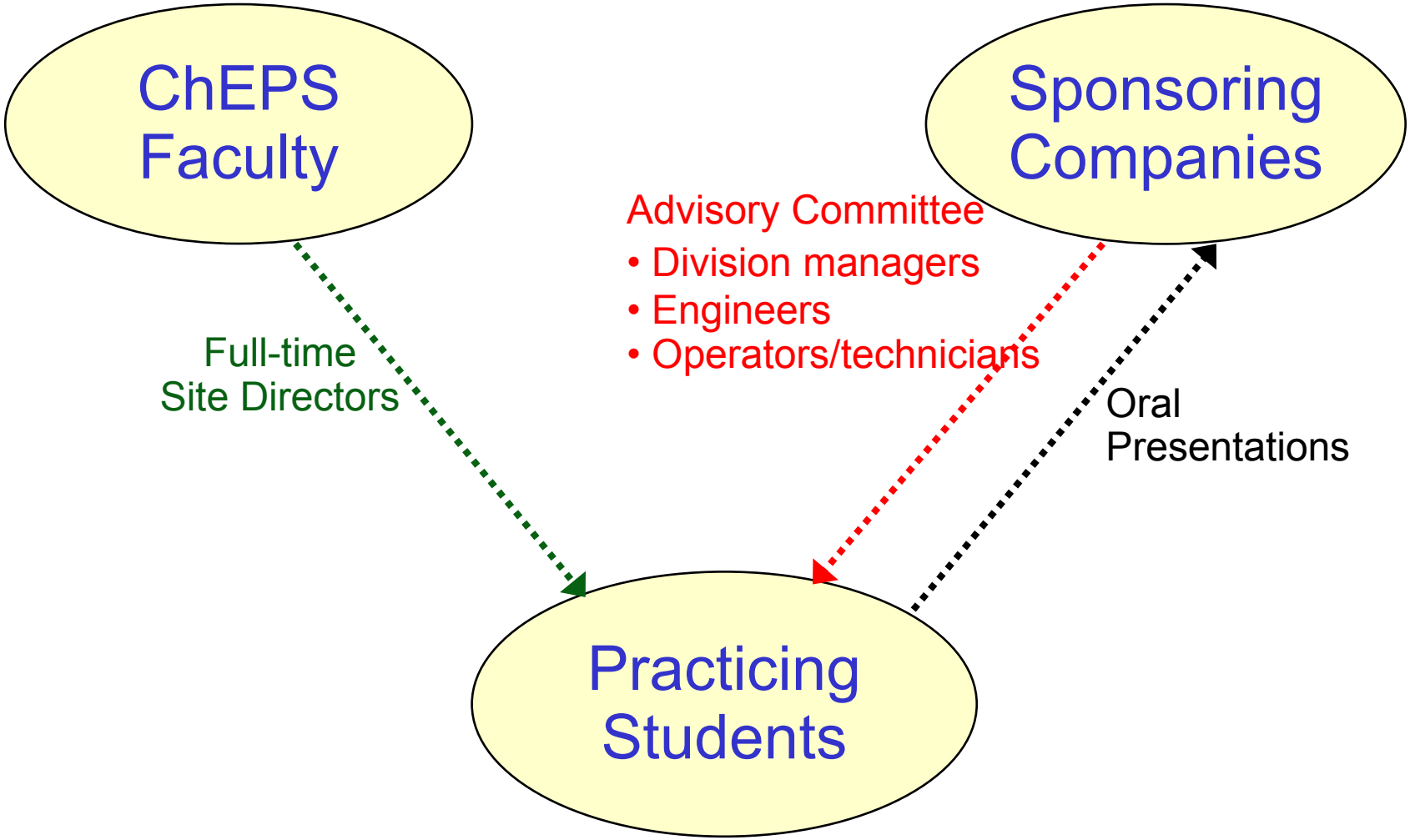
- Modeling & simulation
- Fuel cells and catalysis
- Environmental and clean technology
- Biomolecular engineering, biotechnology & waste engineering
- Energy, polymers, membranes, etc.

Extra Components in ChEPS

- Opportunities to do research overseas
  - ✓ University of Waterloo, Lakehead University, and University of New Brunswick, Canada
  - ✓ University of Sheffield, the UK
  - ✓ Many universities in Taiwan, including a dual-degree program with National Taipei University of Technology

- English tutoring and mentoring system.

Working Relations at a Practice Station

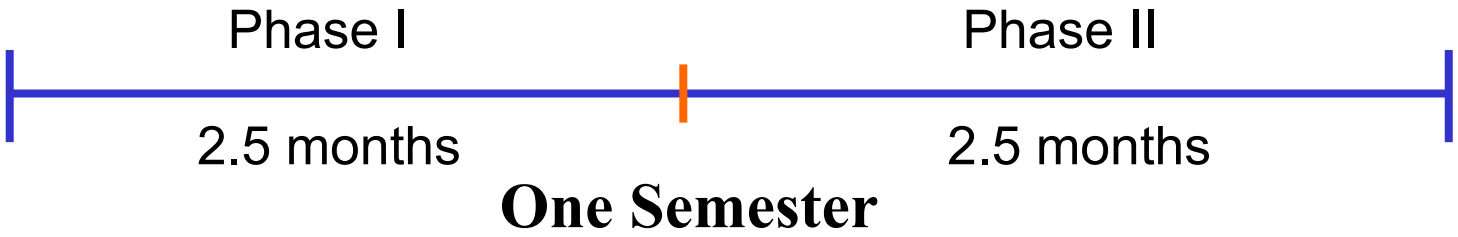


Important Role of a Site Director

1. Identifying site projects
2. Preparing a working timetable
3. Providing technical advice
4. Coaching the students
5. Facilitating activities between sponsors and students

3 Tracks of Practical Training (Internship)

- Regular ChEPS Track: One semester of placement, one semester of thesis
  - Placement consists of 2 phases.
  - Students work in teams of 2 – 3 people



- IR-ChEPS (Industrial-Research) Track: One year of placement in collaboration with SCG-Chem
  - One long industrial project with monthly stipends
  - Individual efforts

3 Tracks of Practical Training (Cont'd)

- AR+ Track: Academic-Research ChEPS
  - 1st year coursework: reduced from 25 to 22 credit hours.
  - Half a semester of internship (2.5 months or 1 phase)
  - 12 credit-hours of thesis
  - Compulsory conference proceedings
  - As opposed to Regular-AR which requires 25 credit hours just like Regular-ChEPS Track but doesn't require any internship

Why Enroll in ChEPS?

- ***Intensive learning in ChE fundamentals***
- ***Problem-solving skills***
- ***Management skills***
- ***Teamwork***
- ***English presentations***

ChEPS Video Presentation

Program Admission

- Bachelor's Degree in Chemical Engineering, Chemical Technology and related fields
- GPA of 2.70 or higher
- English Test (Paper-Based TOEFL), SAT Math Test, and interview (in English/Thai)
- Year 2022 enrollment: 30 - 40 students
- Scholarships are available to qualified candidates

When You Apply:

- **Indicate your preferences on the application form**

Offline Application

Documents to be submitted with this application are:
1. Official transcripts from all universities previously attended
2. A 2×2-inche portrait
3. TOEFL, TOEIC, IELTS, or TETET result (if available)

Recent Photo

The completed application may be emailed or faxed directly to: **hongming.ku@gmail.com**

Program Applied
[ ] ChEPS (Chemical Engineering Practice School)
[ ] BioPhEPS (Biopharmaceutical Engineering Practice School)
[ ] AR (Academic Research)
[ ] AR+ (Academic Research + Internship)

Notes: You may apply to more than one program, but should indicate your preference with a number, starting at 1.
(a) ChEPS and BioPhEPS require a short 6-credit-hour research thesis and a 6-credit-hour internship (practical training)
(b) AR and AR+ require a 12-credit-hour research thesis with a conference proceeding or publication by the end of 2 years. The difference between AR and AR+ is that students under AR+ will undertake a 3-credit-hour internship.

Online Application

Transcripts, portraits, and English scores can be emailed to hongming.ku@gmail.com.

Notes:
(a) ChEPS and BioPhEPS require a short 6-credit-hour research thesis and a 6-credit-hour internship
(b) AR and AR+ require a 12-credit-hour research thesis with a conference proceeding or publication between AR and AR+ is that students under AR+ will undertake a 3-credit-hour 2.5-month internship

Name *
First
Last

Program Applied *
Check-mark all the programs you like to apply to (can be just one), and indicate your preference below.

- [ ] ChEPS (Chemical Engineering Practice School)
- [ ] BioPhEPS (Biopharmaceutical Engineering Practice School)
- [ ] AR (Academic Research)
- [ ] AR+ (Academic Research + Internship)

Scholarships for ChEPS

Visit us at www.cheps-kmutt.com

1. Full Scholarships
   - 250,000 Baht per year for 2 years is waived.
   - Some will be funded by ChEPS' sponsors in exchange for employment (ThaiOil)

2. Half Scholarships
   - Students pay 125,000 Baht per year for 2 years

3. Soft Loans
   - Students pay 125,000 Baht per year for 2 years
   - Soft Loan = Study first, pay later with no interest on the remaining 250,000 Baht

Scholarships for BioPhEPS, AR, and AR+

- **All admitted BioPhEPS students will receive full scholarships (but no monthly stipends).**

- **Admitted AR and AR+ students are eligible for:**
  1. **Full scholarships if their GPAs are above 3.00.**
  2. **A monthly stipend of 3,000 Baht for 2 years if their GPAs are between 3.00 and 3.50.**
  3. **A monthly stipend of 6,000 Baht for 2 years if their GPAs are above 3.50.**

For application deadline and interview dates, please see the handout.

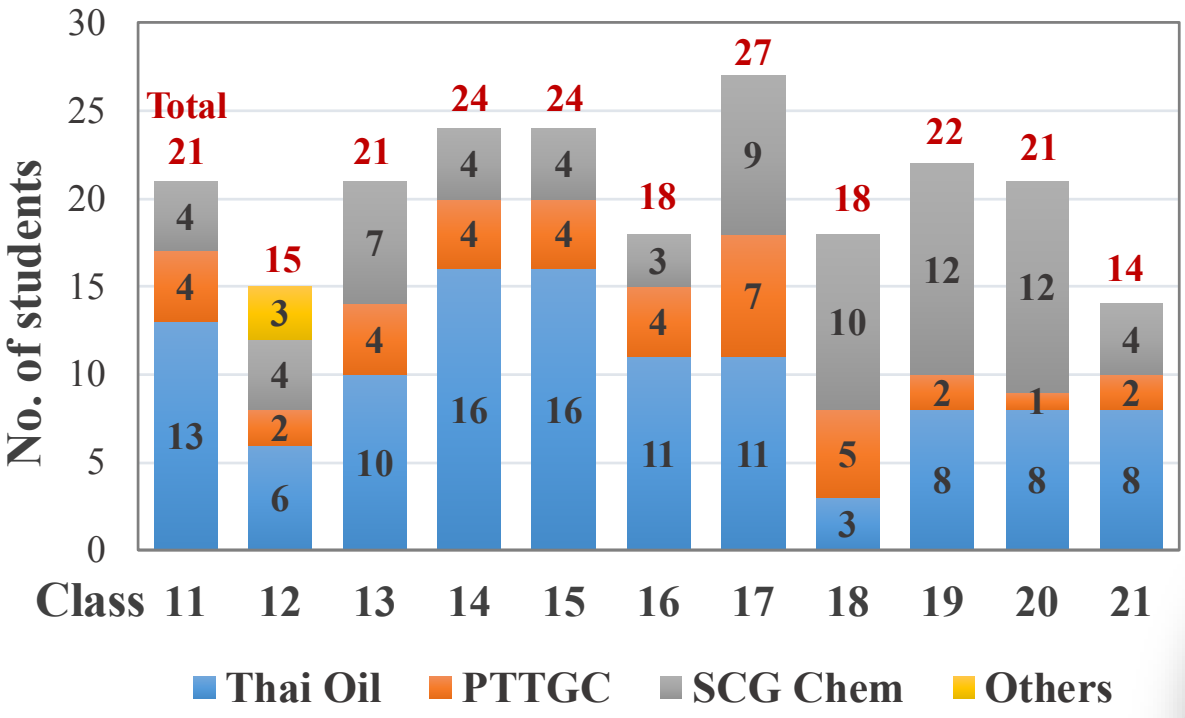
Consider This:

- **ChEPS graduates are highly sought-after by industry and employment is virtually guaranteed.**
- **Salary range for ChEPS graduates is 35,000 – 40,000 Baht per month.**
- **Typical year-end bonuses at large petrochemical companies, such as SCG Chemicals and PTTGC, are 6 – 8 months (210,000 – 320,000 baht)**
- **Costs to obtain a Master's degree in the US, Canada, and Australia are about 3.0M, 2.5M, and 2.0M Baht, respectively.**

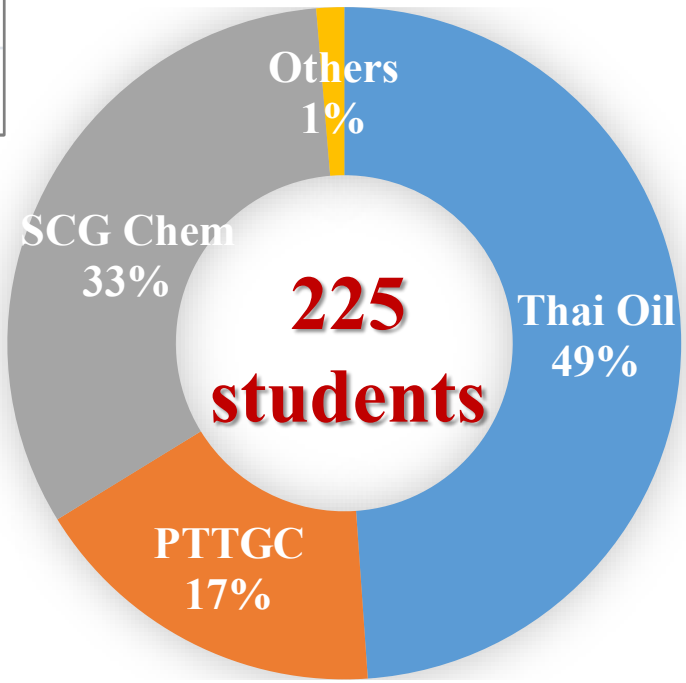
Academic Profile of Admitted Students (25 Classes)

University	No. of Students	Avg. GPA
Burapha University	7	3.22
Chiangmai University	14	3.42
Chulalongkorn University (Chemical Technology)	18	3.19
Chulalongkorn University (Chemical Engineering)	41	3.14
Kasetsart University	58	3.17
King Mongkut's Institute of Technology Ladkrabang	78	3.31
King Mongkut's University of Technology North Bangkok	29	3.29
King Mongkut's University of Technology Thonburi	230	3.34
Khon Kaen University	8	3.23
Mahidol University	26	3.32
Prince of Songkla University	4	3.37
Silpakorn University	5	3.19
Srinakharinwirot University	1	3.45
Suranaree University of Technology	3	3.50
Thammasart University (ChE & SIIT)	38	3.28
Univ. of Waterloo (Canada), ITSNS (Indonesia)	2	Excellent Stand.
Total	**562**	**3.29**

Site Practice Profile of ChEPS' Students

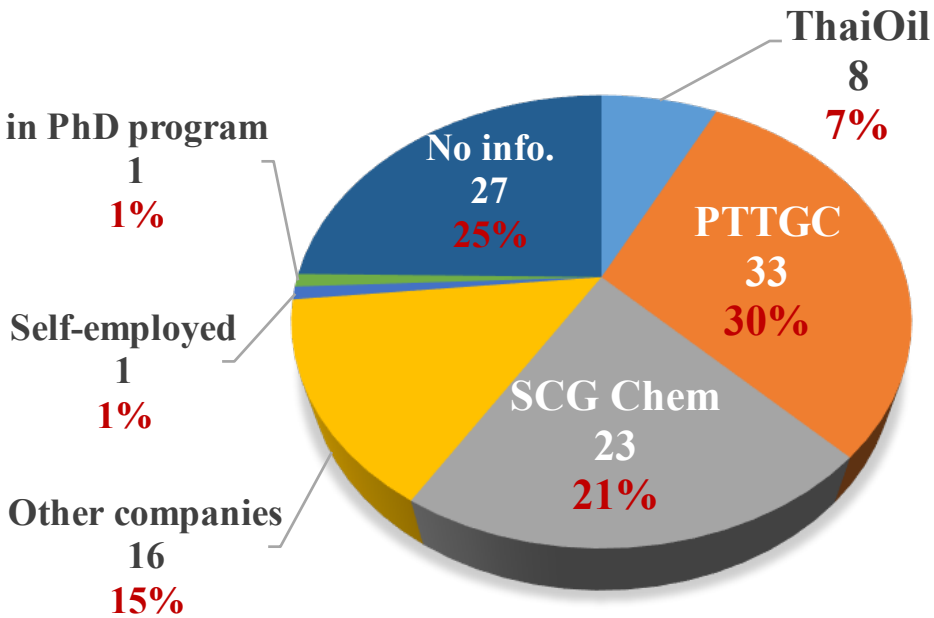


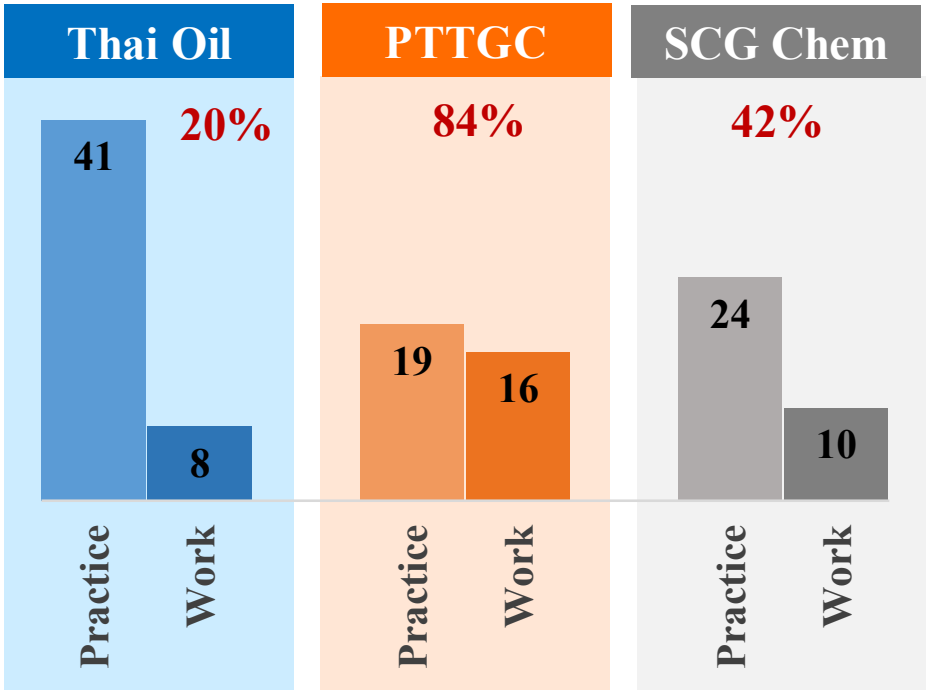
11 Classes
(Class 11 - 21)



Employment Profile of ChEPS's Graduates

5 Classes (Class 16 - 20) : 109 graduates





Other Sister Practice Schools at KMUTT

As chemical engineering students, you are also eligible to apply to:

- Food Engineering Practice School (FEPS), Department of Food Engineering
- Energy Practice School (EnPS), School of Energy and Materials

* Full scholarships are available to all qualified students, and admission competitions are not as fierce as that of ChEPS.

ChEPS Class-1 (1997)

“Thank You for Your Attention”

ChEPS Class-25 (2021)