A Message from the Director

Welcome to the ChEPS family!

Our mission is a simple one: to train and produce top chemical engineers to help Thailand’s chemical, petrochemical, and petroleum industries compete in the new global economy.

This Graduate Student Handbook is meant to provide you with essential information and to answer frequently asked questions that you may have about the ChEPS program. Please take a moment to go through the pages. Of particular interest are the program’s policies, important dates, and how the practice stations work.

As ChEPS is an evolving curriculum and the handbook is by no means comprehensive, you are encouraged to periodically visit our website for the latest information and new additions to the handbook. Moreover, everyone at ChEPS is committed to helping you make a smooth transition from your undergraduate study into graduate study. So please feel free to let us know how we can make your learning in the next two years as educational and as enjoyable as possible.

Finally, I wish you good luck with your studies and a pleasant stay at KMUTT. Happy learning!

Sincerely,

Dr. Hong-ming Ku
Program Director
Chemical Engineering Practice School
KMUTT, Bangkok
March, 2007
INTRODUCTION

1. General Information about ChEPS

The Chemical Engineering Practice School (ChEPS) Program at King Mongkut's University of Technology Thonburi (KMUTT) is a two-year international program leading to a Master's Degree in Chemical Engineering Practice. This intensive program is designed to satisfy the long-felt need of high quality bilingual (Thai and English speaking) chemical engineers in the regional chemical industry by training students both rigorously and rapidly. Since the program is international, the medium of instruction and examination is in English. The program, established in 1997, was developed in close collaboration with the Massachusetts Institute of Technology (MIT), which has successfully operated the practice school concept in the USA since 1916.

The ChEPS program receives funds, resources, and support from a variety of organizations. At its inception, ChEPS received financial support from Suksapattana Foundation, a non-profit organization dedicated to the development of education and innovation in learning, and National Science and Technology Development Agency (NSTDA). NSTDA is a public organization whose mission is to advance and sustain the economic development of Thailand through research, technology development, and the promotion of collaboration between the public and the private sectors.

In subsequent years, Petroleum Institute of Thailand (PTIT) and the Energy Policy and Planning Office (EPPO) under the Ministry of Energy provided additional financial support to the ChEPS program. PTIT is an independent non-profit organization supported by the government, academic and private sectors. PTIT’s members comprise of petroleum and petrochemical companies, and the institute’s main mission is to assist with the development of the two industries in Thailand in areas of human resource development, information service, and policy and regulatory issues. The mission of EPPO is to foster energy conservation and promote public awareness regarding energy savings. Since ChEPS engineers often help the industry save money by minimizing energy consumption, EPPO has a direct interest in funding the program.

Other major contributors of the program also include the Siam Cement Group (SCG), Thai Oil Public Co., Ltd., and PTT Global Chemical Public Co., Ltd. (PTTGC), to name a few. At the same time, many of the program’s alumni who received financial support during their studies are contributing 10% of their salaries to help finance ChEPS. In the future, as the ChEPS alumni base grows, the program expects more generous support from its graduates and to eventually emerge as a self-sustaining model of international graduate program.

2. What Is ChEPS All About?

The ChEPS program believes in hands-on approach to engineering education and
training. To expose its students to real-life problems, the program emphasizes developing close ties and partnerships with the chemical industry and the private sector.

Besides technical competency, one of ChEPS’ major objectives is to instill "professionalism" into its graduate students. A professional can accept responsibility, can direct the efforts of himself and others to achieve preset goals, and is a self-motivated and result-oriented person. The ChEPS students are treated as fellow professionals, whose contributions through new ideas, concepts, and approaches, are appreciated by the program faculty. In addition, the program is committed to fostering the following attributes in its students:

- Organization and planning
- Leadership and team work
- Engineering judgement
- Engineering economics and management
- Verbal and written communication
1. ChEPS Curriculum

There are four regular semesters and one summer session in the ChEPS program. The program curriculum consists of spending one year of graduate coursework on campus, one semester of individual research project also on campus, and one semester in the second year on an industrial site working in teams on technical projects. In the first two semesters, i.e. during the first year, students concentrate on the fundamentals of chemical engineering and engineering management. The remaining two semesters, i.e. the second year, are devoted to chemical engineering practice on-site and thesis research on-campus. Supporting courses such as English, plant design, and process simulation and modeling are taught in the summer session.

Figure 1 depicts a timeline of the ChEPS curriculum.

<table>
<thead>
<tr>
<th>SUMMER</th>
<th>1st YEAR</th>
<th>2nd YEAR</th>
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<tr>
<td>Training</td>
<td>Coursework</td>
<td>Practice &amp; Research</td>
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<tr>
<td>• English</td>
<td>• Lecture</td>
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<td>• Simulation</td>
<td>• Problem-based learning (PBL)</td>
<td>• Research on campus</td>
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<td></td>
<td>• Mentoring</td>
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Figure 1: Timeline of ChEPS Curriculum

2. Curriculum Structure and Coursework

2.1 Curriculum Structure

The ChEPS coursework is highly structured and fairly rigid, since the program emphasizes intensive learning and training. Elective courses are virtually non-existent, although the required courses offer a very comprehensive exposure to various fields in chemical engineering. On the other hand, more open-ended problems and training in areas that are of interest to the students are done through problem-based learning (PBL) in the first year, and special research theses and industrial projects in the second year.

The following table shows the various components of the ChEPS curriculum, which confers a degree in Master of Engineering (ME) upon graduation.
Master of Engineering (Chemical Engineering)

Total program credits 49 credits

Program components

A. Compulsory Courses 37 credits
B. Elective Courses 0 credits
C. Special Research Project 6 credits
D. Intensive Industrial Research Projects 6 credits

2.2 Required Coursework

Summer, Year 1
CHE 654 Computer Application for Chemical Engineering Practice 3 credits
CHE 655 Fundamental of Chemical Engineering Practice 3 credits
LNG 601 Foundation English for International Programs 3 credits
Total 9 credits

Semester 1, Year 1
CHE 610 Intermediate Transport Phenomena 3 credits
CHE 644 Applied Chemical Engineering Thermodynamics 3 credits
CHE 651 Mathematical Analysis for Chemical Engineering 3 credits
CHE 656 Process Analysis and Modeling I 3 credits
CHE 658 Fundamentals of Process Dynamics and Control 2 credits
Total 14 credits

Semester 2, Year 1
CHE 642 Chemical Reaction Engineering 3 credits
CHE 643 Petroleum and Petrochemical Process Chemistry 3 credits
CHE 657 Process Analysis and Modeling II 3 credits
CHE 670 Business Management for Chemical Industry 3 credits
CHE 659 Optimization of Chemical Processes 2 credits
Total 14 credits

Semester 1, Year 2
CHE 791 Intensive Industrial Research Project I 3 credits
CHE 792 Intensive Industrial Research Project II 3 credits
Total 6 credits

Or
CHE 790 Special Research Project 6 credits
Total 6 credits

Semester 2, Year 2
CHE 791 Intensive Industrial Research Project I 3 credits
CHE 792 Intensive Industrial Research Project II 3 credits
Total 6 credits

Or
CHE 790 Special Research Project 6 credits
Total 6 credits
Note that in the second year, some of the students will work on their research projects while others will be interned at practice stations in Semester 1. Their roles are subsequently reversed in Semester 2.

3. Course Descriptions

The following is a summary of course descriptions.

**Code/Subject**: CHE 610 Intermediate Transport Phenomena  
**Prerequisite**: Fluid mechanics, heat, and mass transfer  
**3 credit hours**  
Formulation and rigorous analysis of the laws governing the transport processes of momentum, heat and mass. The topics studied include the molecular transport, concept of transport coefficient by shell balance techniques, equations of change for multi-dimensional transport, transport with more than two independent variables, turbulent flow, transport between phases, and macroscopic balances.

**Code/Subject**: CHE 644 Applied Chemical Engineering Thermodynamics  
**Prerequisite**: Introduction to thermodynamics  
**3 credit hours**  
Applied thermodynamics, gas-liquid equilibrium, liquid-liquid equilibrium, cubic equations of state such as Peng-Robinson and Redlich-Kwong-Soave, activity coefficient models such as Wilson, NRTL, and UNIQUAC, selection of physical property package in process simulation.

**Code/Subject**: CHE 642 Chemical Reaction Engineering  
**Prerequisite**: Reaction kinetics  
**3 credit hours**  
Advanced topics in reactor design: nonideal flow and nonisothermal reactors, effect of mixing on reactor operation, scale up techniques, adsorption and heterogeneous catalysis, optional design of various types of chemical reactor, arrangements and reactor stability analysis.

**Code/Subject**: CHE 643 Petroleum and Petrochemical Process Chemistry  
**Prerequisite**: Organic chemistry  
**3 credit hours**  
Review of organic chemistry, organo-metallic chemistry, polymer science and processing, petroleum and petrochemical process and chemistry.

**Code/Subject**: CHE 651 Mathematical Analysis for Chemical Engineering  
**Prerequisite**: Applied mathematics and differential equations  
**3 credit hours**  
Mathematical formulation and solution of problems drawn from the fields of heat and mass transfer, fluid mechanics, and reaction kinetics employing ordinary differential equations and partial

**Code/Subject:** CHE 654 Computer Application for Chemical Engineering Practice  
**Prerequisite:** None

**3 credit hours** History and background of chemical process simulation, sequential modular approach vs. equation-oriented approach, flowsheet partitioning and determination of tear streams, mass balance and degree of freedom analysis using elementary modules, steady-state simulation with ASPEN PLUS including sensitivity analysis, design-specifications, calculator blocks, and flowsheet convergence, in-depth coverage of physical property methods and applied thermodynamics used in simulation, discussion of numerical solvers in ASPEN PLUS such as Wegstein, Secant, Direct, Newton’s, and Broyden’s methods.

**Code/Subject:** CHE 655 Fundamental of Chemical Engineering Practice  
**Prerequisite:** Chemical plant design

**3 credit hours** Review of chemical engineering fundamentals via chemical plant design, problem-based learning (PBL) with teams of students working on different plant design projects to produce assigned chemicals, oral presentations by students, use of ASPEN PLUS as a simulation tool for design, including economic evaluation and profitability analysis.

**Code/Subject:** CHE 656 Process Analysis and Modeling I  
**Prerequisite:** Process simulation

**3 credit hours** System and chemical process analysis and modeling using fundamentals of chemical engineering, dynamic mathematical modeling in terms of nonlinear algebraic equations and ordinary differential equations (ODEs), programming in MATLAB and using MATLAB to solve nonlinear algebraic equations and ODEs, problem-based learning (PBL) with design projects from industrial sponsors in the petroleum and petrochemical industries, and oral presentations by teams of students.

**Code/Subject:** CHE 657 Process Analysis and Modeling II  
**Prerequisite:** Process simulation and modeling

**3 credit hours** Introduction and fundamentals of optimization, problem formulations, calculus-based optimization, unconstrained optimization, constrained optimization, linear programming, mixed-integer linear programming, branch-and-bound method, and optimization using MATLAB toolbox, problem-based learning (PBL) with design projects from industrial sponsors in the
petroleum and petrochemical industries, and oral presentations by teams of students.

**Code/Subject**: CHE 658 Fundamentals of Process Dynamics and Control  
**Prerequisite**: Process dynamics and control  
**2 credit hours** Modeling and analysis of the dynamics of chemical processes, Laplace transforms, block diagrams, feedback control systems, and stability analysis.

**Code/Subject**: CHE 659 Optimization of Chemical Processes  
**Prerequisite**: Fundamentals of optimization  
**2 credit hours** Problem formulation involving process optimization, process optimization using ASPEN PLUS, optimization solvers such as sequential quadratic programming (SQP) and Complex algorithm.

**Code/Subject**: CHE 670 Business Management for Chemical Industry  
**Prerequisite**: None  
**3 credit hours** Economic and accounting concepts, tools for decision-making and solving the problems in chemical process industries (CPI), basic economics, basic accounting, input-output analysis, marketing, manufacturing, employment, finance, corporate annual reports, project management, environmental aspects of the CPI, international aspects of the CPI, future prospects: threats and opportunities.

**Code/Subject**: CHE 790 Special Research Project  
**Prerequisite**: Second-year student status  
**6 credit hours** This course is a graduate special research project, with the well defined problem in the area of interest in Chemical Engineering field.

**Code/Subject**: CHE 791 Intensive Industrial Research Project I  
**Prerequisite**: Second-year student status  
**3 credit hours** Practice school students will be assigned to work within the host company, on the company’s problem, using the company’s problems with the company’s resources and equipment. The student will work under the quittance of resident faculty at the industrial site. The following steps are included the in the activities: problem statements provided by the company with the approval of the resident faculty, writing a written investigative memorandum, proposal conferencing, final report and final presentation.

**Code/Subject**: CHE 792 Intensive Industrial Research Project II  
**Prerequisite**: Second-year student status
3 credit hours  Similar to CHE 791 but on the different topic of equal importance. It requires the work of 3 credits as well.

Code/Subject : LNG 610 Foundation English for International Programs
Prerequisite  : None

3 credit hours  Basics of English grammar, training in listening, writing, and presentation.

4. Timeline and Important Milestones of ChEPS Program

A ChEPS student will follow one of the following two timelines depending upon the sequence of the on-site practice school and special research on campus.

<table>
<thead>
<tr>
<th>Month</th>
<th>Duration</th>
<th>Plan</th>
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<tbody>
<tr>
<td><strong>Year I</strong></td>
<td></td>
<td></td>
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<tr>
<td>January</td>
<td>1 month</td>
<td>Recruitment</td>
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<tr>
<td>June – July</td>
<td>2 months</td>
<td>Summer session</td>
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<tr>
<td>August</td>
<td>1 week</td>
<td>Break</td>
</tr>
<tr>
<td>August – December</td>
<td>5 months</td>
<td>First semester</td>
</tr>
<tr>
<td>January</td>
<td>1 week</td>
<td>Break</td>
</tr>
<tr>
<td>January – May</td>
<td>5 months</td>
<td>Second semester</td>
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<tr>
<td><strong>Year II</strong></td>
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<td></td>
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<tr>
<td>June</td>
<td>1 week</td>
<td>Break</td>
</tr>
<tr>
<td>July</td>
<td>2 weeks</td>
<td>Thesis proposal</td>
</tr>
<tr>
<td>August – December</td>
<td>5 months</td>
<td>Academic research on campus or practice school on site</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
CHEPS POLICIES

The ChEPS program regards all its students as professionals and trusts them with their ethical judgement. However, certain policies have to be laid out beforehand to maintain an atmosphere of equality and fairness for all.

1. Policies for On-Campus Program

On campus, all academic work such as homework assignments or tests or individual projects should be done according to the guidelines provided by the course instructor. A student who uses improper means to complete the academic work should do so at his/her own risk. In the event of discovery of such an incident, a severe disciplinary action will be taken against the involved student(s) and multiple incidents of this nature may lead to expulsion from the program.

While the ChEPS program offers several facilities and equipment to its students for completing their academic work, each student is also required to own a personal laptop. Students must use these facilities responsibly and report any misuse to one of the ChEPS faculty or staff members as soon as possible. The following are the specific guidelines for the use of the ChEPS facilities:

1. The ChEPS facilities, including computers and LCD projectors, are meant for only ChEPS graduate students. Unauthorized use by an OUTSIDER should be reported to a ChEPS faculty or staff as soon as possible.

2. The ChEPS students must use the ChEPS facilities, including computers, for doing their academic work only.

3. Students are NOT permitted to install unauthorized software or other programs on the ChEPS computers. Also, students are NOT allowed to change major hardware/software configurations on any of the ChEPS computers or other equipment without prior approval from the ChEPS administration.

4. The ChEPS program will tolerate only normal wear and tear of the equipment used by the ChEPS students. Therefore, students must handle the ChEPS equipment, including computers, in a proper manner to avoid any damage. The students may be FINED FINANCIALLY for excessive damage to the ChEPS equipment, including computers, resulting from improper handling/use.

2. Policies for On-Site Program

The ChEPS students work within the company and on the company's problems using the company's resources and equipment, but they are not company employees. Rather, the students work for academic credit under the guidance of site-director/resident
faculty at the site.

Although the students act like company employees while working on site, they are not subjected to any leave or other benefits that the company offers to its employees. The students have to follow the schedule of the ChEPS program. In case of an emergency, the student should notify the site director/resident faculty as soon as possible.
CHEPS OPERATING PROCEDURES

1. Admission

Completing the academic, research, and extra-curricular requirements of the ChEPS graduate program requires hard work, dedication, persistence, creativity, and an ambition to excel. For this reason, only the best students are being sought who can meet the high standards set by the program.

The admission procedure is a multi-step process and may involve visits of the ChEPS faculty members to various universities for student recruitment, applications screening, and interviewing. Prospective students should apply by submitting a completed application form before a deadline set forth by the program. This deadline is usually at the end of December.

2. Design Problems (PBL Projects)

All students are trained during the first year at KMUTT in order to be prepared for the practice school in the second year. The training comes in two forms, namely coursework and problem-based learning (PBL), a.k.a. design problems. The coursework consists of 12 courses typical in a normal Master's program in Chemical Engineering. The design problems may be thought of as mini-site-projects. There is one design problem (per student group) in each semester in the first year. The objective is to better prepare the students by familiarizing them with real-life problems, though smaller in scale than site projects, and training them in report writing and oral presentations.

2.1 Nature of Design Problems

The following are some guidelines for the design problems that ChEPS is looking for:

(a) The design problem should come from a real process or operation. An ideal candidate is one which is too small to be made into a site project and yet the company is still interested in finding a solution.

(b) The problem should be well-defined (as opposed to being open-ended), and its scope should be such that it can be completed by a team of 3-4 students within 8 weeks working on a total of approximately 30 hours per week.

(c) The problem should involve some sort of simulation and optimization, and may require the use of a simulation package such as PRO/II or ASPEN PLUS. In some rare cases, the students may have to develop their own program to solve parts of the problem.
2.2 Role of the Corporate Sponsors

ChEPS will initiate the first contact with its corporate sponsors to solicit a number of design problems. Once the companies agree to participate, an engineer should be appointed to be the focal contact person. ChEPS would then organize a meeting between the students and the company engineer, in which the students are briefed about the problem and given some technical data. This usually takes place at the company. Subsequent visits to the company may be necessary to obtain more data. During the duration of the project, students are encouraged to contact the company engineer by emails or fax if further clarifications are needed. However, the students may contact the company engineer by telephone only after the engineer agreed to it. The students should in no way interrupt or interfere with the daily work routine of the company engineer.

2.3 Format of Design Problems

A group of 3-4 students will work in team on one design problem. There is no team leader and each group member is expected to contribute equally to the project. A total of 8-10 weeks will be allocated to solving the problem, which usually is the last two months of an academic semester. One or more advisors, usually a KMUTT staff, are assigned to oversee each project. The advisors ensure that satisfactory progress is being made and assist the students in both technical problems and writing. During the 8-10 weeks of the projects, progress is monitored with bi-weekly discussions, reports, and oral presentations. The company engineers need not participate in these activities which take place at KMUTT. At the end of the 8-10 weeks, the design problem will culminate in a Final Presentation in which the students present their findings to the sponsors. This usually takes place at the sponsoring company.

3. On-Site Practice Problems

Following two semesters of graduate lectures on campus, students spend one semester in the second year of their program at a Practice School site. A feature that distinguishes the ChEPS from other programs that cooperate with industry is the presence of full-time faculty resident at the industrial sites where students work. Selected ChEPS faculty members serve as the site directors. In addition, faculty members from the main campus regularly visit the sites to attend presentations and to advise the students on technical matters. Engineering staff from the industrial plant outline possible projects to the resident faculty and serve as consultants. The site directors screen potential problems based on the following three criteria:

- The project should have sufficient educational value for the student by stressing the application of chemical engineering fundamentals.
- The solution should require a broad range of skills, including technical ability, original thought, initiative and judgement.
- The results should be useful to the host company and achievable in the time allotted.
The site projects may have an experimental component involving collection and analysis of data. Frequently, they will involve direct use of process-scale equipment.

There is an on-site practice school handbook that describes in details the on-site practice school operation and its academic requirements. A student must obtain a copy this on-site practice school handbook from the ChEPS administrative office.

4. Academic Project or Thesis Research

The ChEPS students work on their thesis research individually for one semester during the second year of the program under the guidance of a thesis committee. The committee members monitor the student's progress on a regular basis towards a successful completion of the thesis research. The student is required to submit copies of a written thesis to all the committee members at least one week in advance of the scheduled final thesis examination.

All available research topics will be announced and posted by ChEPS faculty sometime in February of the second year. All second-year students, regardless of whether they will conduct their research on campus in the first or second semester, must submit and defend their research thesis proposals in mid-July. After that, about half of the students will be interned at practice stations, while the remaining will stay behind at KMUTT to carry out their research. For those working on research, there will be a total of two progress presentations, approximately one every 6 weeks, to keep the advisor and the research committee abreast of their work. A progress written report is also expected to be submitted one week before the oral presentation. All students must defend their research project at the end of the five-month period. In the unlikely event that a student is unable to complete his or her work in the allotted five months, an extension into the summer of the second year may be granted. However, the student may be asked to pay for the extra tuition fee in the summer or even fined 50,000 baht if the delay is a direct result of negligence or poor performance by the student.

5. Graduation

A total of 49 credits are required for graduation from the ChEPS program. The second year academic research project or thesis is awarded 6 credits and so does the practical training undertaken at the industrial site. The remaining 37 credits should be completed through various core courses offered by the ChEPS program. After completing all the academic and research requirements of the program, a student receives a Master’s Degree of Engineering in Chemical Engineering.

In addition to the required credit hours, ChEPS students are required (both university policy and ChEPS policy) to pass an English proficiency test before graduation by making the following score on the English test:

- 500 on the ITP-TOEFL (paper-based) offered by the School of IT at KMUTT
However, ChEPS students who took LNG601 automatically fulfill the university’s English requirement but not the ChEPS’ requirement. To fulfill the ChEPS’ English requirement, each student must score at least 500 once on the paper-based TOEFL (PBT), which can either be administered by ChEPS (the students’ admission PBT scores can be used for this purpose) or be taken at the School of IT at KMUTT.

Alternatively, a ChEPS student may take an official TOEIC (Test of English for International Communication) test and must score at least 650 in order to fulfill the ChEPS’ English requirement.
RULES AND PROCEDURES OF CHEPS SPECIAL RESEARCH PROJECTS

1. Rules for Special Research Projects

1. ChEPS staff will post topics, advisor(s), co-advisor(s), thesis committee, and timetable for presentations during the 3rd week of February.

2. Students should inform ChEPS administration about the selection of their research topics and begin their theses by the beginning of March.

3. Each student is required to give a proposal presentation by the middle of July.

4. Each student is required to give two progress presentations and a thesis defense presentation, which are evenly spread out during the five-month duration of the research.

5. For each presentation, students are required to inform the ChEPS administration about the date and the time at least three days before the presentation.

6. Students are required to submit a written report (e.g. proposal, progress, etc.) to the thesis committee at least three days before each presentation.

7. Each student is required to submit a draft copy of the thesis report to the committee and to the ChEPS administration at least one week before the thesis defense date.

8. Students are required to submit the Thesis Committee Confirmation Form to the ChEPS office before all presentations.

9. Students should submit a proposal form (ข presup) including the advisor's signature to the ChEPS administration after the proposal presentation.

10. Students should have the committee members sign the ตต.2 form after their presentations on the thesis progress date.

11. Students are required to submit a ตต.1 form including the advisor's signature to the ChEPS administration at least three weeks before the thesis defense.

12. Students should have the committee members sign the ตต.3 form after their presentations on the thesis defense date.

13. Students must correct their thesis final reports and submit them to the Faculty of Engineering within 30, 45 or 60 days (at the discretion of the committee)
after their thesis defense date.

14. Some research projects may offer extra stipends to the students. Students who receive monthly stipends (as loan) from ChEPS will not receive this extra money directly. Instead, the extra money will be deducted from the outstanding balance that the students owe to ChEPS upon their graduation. For those who do not borrow monthly stipends from the program, the extra money from the research group will be transferred directly to the students’ bank accounts.

15. Some research projects may involve overseas collaboration and require that students spend a few months conducting research at an overseas institution. In such cases, it is the students’ responsibilities to shoulder the costs and expenses of these trips. However, some overseas collaborators will provide small allowances to the student, while ChEPS will partially sponsor the airfare of the trip. The exact amount depends on the geographical location of the overseas universities.

Notes:

▪ Any student who does not follow these regulations will not be allowed to complete his/her thesis in one semester, unless prior exception is granted by the ChEPS staff.

▪ If the students fail to complete the research in one semester due to poor performance and negligence, they will be fined 50,000 bath to maintain their status as KMUTT students.

▪ ChEPS staff can help students with technical writing, particularly with the thesis reports. However, such students will need to contact the technical writing advisor early in the semester to work out a writing timetable.

2. Thesis Advisor(s) and Committee

Each research project will have at least one advisor. Some projects may have co-advisors.

A thesis proposal and a thesis defense require that a committee be present to evaluate the student’s work. The research advisor will recommend and select committee members based on their expertise and qualifications in the field of research. The minimum number of committee for each research project is two. One of the committee members must come from inside ChEPS/ChE Department. Industrial sponsors can be committee members, provided that they have Master’s or PhD degrees and must possess expertise in the field of research.
FREQUENTLY USED FORMS

The forms that are frequently used by ChEPS students for various purposes are listed below. They are also available for downloads at ChEPS’ website at www.cheps-kmutt.com.

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<th>Types of Form</th>
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<td>2. Thesis Committee Confirmation Form</td>
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<tr>
<td>3. Committee Contact Information Form</td>
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<td>4. Bor 1 (บ.1)</td>
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<td>5. Bor 2 (บ.2)</td>
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<td>6. Bor 3/1 (บ.3/1)</td>
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<td>7. Wor Sor 1 (วศ.1)</td>
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<tr>
<td>8. Special Research Project Evaluation Form</td>
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<td>9. Thesis Submission Form</td>
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<tr>
<td>10. Debt Clearance Form (ใบปลอดหนี้)</td>
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<tr>
<td>11. Copyright Transfer Agreement Form</td>
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<td>12. Student Profile Form</td>
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CHEPS FACULTY MEMBERS AND STAFF

CHEPS ADVISORY BOARD

1. NAME : Assoc. Prof. Dr. Sakarindr Bhumiratana  
   JOB TITLE : University President  
   INSTITUTE : King Mongkut’s University of Technology Thonburi (KMUTT)  
   ADDRESS : President’s Office Building  
              126 Pracha-utid Rd., Bangmod, Thoongkru District, Bangkok 10140

   TEL : 02-470-8020  
   FAX : 02-872-9087  
   E-mail : sakarindr.bhu@kmutt.ac.th

   RESEARCH AREAS/INTEREST  
   ▪ Biogas research and development  
   ▪ Transport properties of food materials  
   ▪ Algal technology  
   ▪ Research management, strategic and socio-economic activities

2. NAME : Assoc. Prof. Dr. Suvit Tia  
   JOB TITLE : Senior Vice President for Academic Affairs  
   INSTITUTE : King Mongkut's University of Technology Thonburi (KMUTT)  
   ADDRESS : 4th Fl., Chemical Engineering Building,  
              126 Pracha-utid Rd., Bangmod, Thoongkru District, Bangkok 10140

   TEL : 02-470-8023  
   FAX : 02-872-9087  
   E-mail : suvit.tia@kmutt.ac.th

   RESEARCH AREAS/INTEREST  
   ▪ Pyrolysis and combustion of solid fuels, fluidized bed combustion  
   ▪ Thermal storage and processing  
   ▪ Energy conservation and management  
   ▪ Design and development of chemical processes
3. **NAME**: Dr. Hong-ming Ku  
   **JOB TITLE**: Director and Lecturer of Chemical Engineering Practice School (ChEPS), Department of Chemical Engineering  
   **INSTITUTE**: King Mongkut's University of Technology Thonburi (KMUTT)  
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   **FAX**: 02-872-9118  
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**RESEARCH AREAS/INTEREST**

- Process simulation and modeling
- Process optimization
- Optimization techniques and algorithms
- Engineering education such as PBL and design of practice-based curricula

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**CHEPS LECTURERS**

1. **NAME**: Assoc. Prof. Dr. Asawin Meechai  
   **JOB TITLE**: Associate Professor and Secretariat, Chemical Engineering Practice School (ChEPS), Department of Chemical Engineering  
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**RESEARCH AREAS/INTEREST**

- Applying metabolic engineering, systems biology and bioinformatics approaches to understand complex mechanisms in *Saccharomyces cerevisiae*, *Mucor rouxii*, *Spirulina platensis*, *Plasmodium falciparum*, *Mycobacterium tuberculosis*, and Cassava.
2. NAME : Assist Prof. Dr. Jindarat Pimsamarn  
   JOB TITLE : Lecturer, Chemical Engineering Practice School (ChEPS), Department of Chemical Engineering  
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TEL : 02-470-9221 Ext. 204  
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RESEARCH AREAS/INTEREST  
- Membrane technology gas separation by polymer membrane  
- Biochemical engineering: enzyme production from bacteria and molds  
- Material science and engineering: applications of gymsum

3. NAME : Dr. Saranya Thonglek  
   JOB TITLE : Learning Specialist, Chemical Engineering Practice School (ChEPS), Department of Chemical Engineering  
               Head of KMUTT’s WIL Office  
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RESEARCH AREAS/INTEREST  
- Engineering education and work-integrated learning (WIL)
4. **NAME**: Assoc. Prof. Dr. Thongchai Srinophakhun  
**JOB TITLE**: Associate Professor, Department of Chemical Engineering  
**INSTITUTE**: Kasetsart University  
**ADDRESS**: 50 Phaholyothin Road, Bangkok, Thailand 10900  

**TEL**: 02-942-8555 Ext. 1214  
**FAX**: 02-579-2083, 02-579-6804  
**E-mail**: fengtcs@ku.ac.th  

**RESEARCH AREAS/INTEREST**  
- Computer-aided process engineering  
- Petroleum and petrochemical process simulation and system analysis  
- Advanced control theories  
- Advanced computational algorithms

5. **NAME**: Assoc. Prof. Dr. Kwanchanok Pasuwat  
**JOB TITLE**: Associate Professor, Chemical Engineering Practice School (ChEPS), Department of Chemical Engineering  
Chair of Bioengineering Program (BIE)  
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**RESEARCH AREAS/INTEREST**  
- Controlled release of anticancer drugs from a biodegradable polymer system  
- Microfluidics biosensor detection system
6. **NAME**: Assoc. Prof. Dr. Supaporn Therdtianwong  
   **JOB TITLE**: Associate Professor, Department of Chemical Engineering  
   **INSTITUTE**: King Mongkut’s University of Technology Thonburi (KMUTT)  
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   **RESEARCH AREAS/INTEREST**  
   - Catalyst preparation and characterization  
   - Catalysis and chemical reaction engineering  
   - Clean/alternative fuel production  
   - Fuel cells technology  
   - Trouble-shooting and process simulation in petroleum and petrochemical industry

7. **NAME**: Dr. Chutima Kongvarhodom  
   **JOB TITLE**: Lecturer, Chemical Engineering Practice School (ChEPS), Department of Chemical Engineering  
   **INSTITUTE**: King Mongkut's University of Technology Thonburi (KMUTT)  
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   **RESEARCH AREAS/INTEREST**  
   - Corrosion  
   - Computational fluid dynamics modeling  
   - Plating and nuclear nonproliferation  
   - Safeguards and security
8. **NAME** : Dr. Nonsee Nimitsiriwat  
**JOB TITLE** : Site Director, Chemical Engineering Practice School (ChEPS)  
**INSTITUTE** : King Mongkut's University of Technology Thonburi (KMUTT)  
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**TEL** : 02-470-8382  
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**RESEARCH AREAS/INTEREST**  
- Polymer synthesis  
- Chemical modification of polymers

9. **NAME** : Assist. Prof. Dr. Amornmart Sirijaruphan  
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**RESEARCH AREAS/INTEREST**  
- Catalysis
CHEPS SPECIAL LECTURERS

1. **NAME**: Dr. Philips A. Schneider  
   **JOB TITLE**: Lecturer and Associate Dean, School of Engineering  
   **INSTITUTE**: James Cook University, Australia  
   **ADDRESS**: Department of Chemical Engineering, James Cook University, Townsville, Qld 4811, Australia  
   
   **TEL**: (+617)-4781-5427  
   **FAX**: (+617)-4775-5044  
   **E-mail**: phil.schneider@jcu.edu.au

   **RESEARCH AREAS/INTEREST**
   - Process monitoring & control
     - improved control and optimization of sugar crystallisation systems
   - Process modeling
     - clarifier interface dynamics
     - dynamics of rotary dryers
     - multi-effect evaporation simulation
   - Process Design
     - high temperature ethanol fermentation
     - ballast water treatment system development
   - Other areas of research
     - wax filtration studies
     - color characterization and removal from raw sugar streams
     - investigating viscous boiling in heated vertical tubes

2. **NAME**: Prof. Peter L. Douglas  
   **JOB TITLE**: Professor, Department of Chemical Engineering  
   **INSTITUTE**: University of Waterloo, Canada  
   **ADDRESS**: Department of Chemical Engineering, University of Waterloo, Canada

   **TEL**: (519) 888-4601  
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   **RESEARCH AREAS/INTEREST**
   - Process simulation, process control, and process synthesis
   - Large-scale process optimization and real-time optimization (RTO)
   - CO₂ mitigation technologies
   - Post harvest grain technology
3. NAME : Assoc. Prof. Roderick W. Bates  
   JOB TITLE : Associate Professor, School of Physical & Mathematical Sciences  
   INSTITUTE : Nanyang Technological University, Singapore  
   ADDRESS : 1 Nanyang Walk, Block 5, Level 3, Singapore 637616  
   TEL : (+65) 6316-8907  
   E-mail : roderick@ntu.edu.sg  

RESEARCH AREAS/INTEREST  
- Development of reactions for the synthesis of natural products and other interesting molecules, particularly using transition metals, and focusing on the control of stereochemistry  

4. NAME : Prof. Dr. Juergen Rarey  
   JOB TITLE : Professor and Director of DDBST GmbH  
   INSTITUTE : University of Kwazulu-Natal, South Africa  
   ADDRESS :  
   TEL :  
   E-mail : juergen@rarey.net  

RESEARCH AREAS/INTEREST  
- Applied thermodynamics  

5. NAME : Dr. Yatika Somrang  
   JOB TITLE : Researcher, MTEC  
   INSTITUTE : National Science and Technology Development Agency  
   ADDRESS : Rangsit, Bangkok  
   TEL :  
   E-mail : yatikas@mtec.or.th  

RESEARCH AREAS/INTEREST  
- Pyrolysis; gasification; biofuels
6. **NAME** : Dr. Paritta Prayoonyong  
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**ADDRESS** : 999 Phuttamonthon 4 Road, Salaya  
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**RESEARCH AREAS/INTEREST**
- Separation process design  
- Heterogeneous azeotropic distillation  
- Hybrid separation processes  
- Development of separation and purification technologies in biofuel production

**CHEPS ADMINISTRATIVE STAFF**

1. **NAME** : Ms. Chadaporn Dammunee  
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CHEPS’ INDUSTRIAL SPONSORS & CONTACT INFO

1. Bangkok Synthetics Co., Ltd. & BST Elastomers Co., Ltd. (BST)
   URL: www.bst.co.th

   Head Office:
   175 Sathorn City Tower 22nd Fl., South Sathorn Road, Tungmahamek,
   Sathorn, Bangkok 10120.
   Tel: (662) 679-5120
   Fax: (662) 679-5119

   Factory:
   5 I-7 Rd., Map ta Phut Industrial Estate, Muang district,
   Rayong 21150.
   Tel: (038) 683-314
   Fax: (038) 683-315

2. Energy Policy and Planning Office (EPPO)
   URL: www.eppo.go.th

   121/1-2 Phetchaburi Road, Ratchathewi, Bangkok 10400, Thailand
   Tel: 0 2612-1555
   Fax: 0 2612-1358
   From outside Thailand: Tel +66 2612-1555, Fax +66 2612-1358

3. ExxonMobil Limited
   URL: www.exxonmobil.com/usa-english/hr/siteflow/thailand.asp

   118 Moo 2, Sukhapibal 7 Road
   Tung Sukia, Sriracha, Chon Buri 20230
   Tel: (038) 483-900
   Fax: (038) 493-940

4. National Science and Technology Development Agency (NSTDA)
   URL: www.nstda.or.th

   111 Thailand Science Park, Paholyothin Rd., Kong 1,
   Klong Luang, Pathumthani 12120, Thailand
   Tel: 0-2564-7000
   Fax: 0-2564-7001 – 5
   Call Center: 0-2564-8000
5. **Rayong Olefins Co., Ltd. (ROC)**

   Head Office:
   The Siam Cement Public Co., Ltd. *(Headquarter)*
   URL: [www.siamcement.com](http://www.siamcement.com)
   1 Siam Cement Road, Bangsue, Bangkok 10800 Thailand
   Tel: 66-2586-4444, HomeMart
   Call Center Tel: 66-2586-2222

   Rayong Plant:
   271 Sukhumvit Road, Map Ta Phut, Muang, Rayong
   Tel: 0-3868-5040-8, 0-3891-1480-5
   Fax: 0-3891-1489

6. **Petroleum Institute of Thailand (PTIT)**
   URL: [www.ptit.org](http://www.ptit.org)

   18th Floor, PTT Building
   555 Vibhavadi Rangsit Road,
   Chatuchak, Chatuchak, Bangkok 10900
   Tel: 66 (0) 2 537 3592-8
   Fax: 66 (0) 2 537 3591

7. **PTT Global Chemical Public Co., Ltd. (PTT-GC)**
   URL: [www.pttggroup.com](http://www.pttggroup.com)

   Head Office:
   123 Suntowers Building B, 31 st – 35 th Floor,
   Vibhavadi Rangsit Road, Chomphon, Chatuchak, Bangkok 10900
   Tel: +66 (0) 2265-8400 Fax: +66 (0) 2265-8500

   **1st Branch:** (Suntowers A Branch)
   123 Suntowers Building A, 14 th, 18 th Floor,
   Vibhavadi Rangsit Road, Chomphon, Chatuchak, Bangkok 10900
   Tel: +66 (0) 2265-8100
   Fax: +66 (0) 2265-8111

   **2nd Branch:** (I-1 Road Branch)
   14 I-1 Road, Tambon Map Ta Phut,
   Amphoe Mueang Rayong, Rayong 21150
   Tel: +66 (0) 3892-2100
   Fax: +66 (0) 3892-2111

   **3rd Branch:** (I-4 Road Branch)
   9 I-4 Road, Tambon Map Ta Phut, Amphoe Mueang Rayong,
   Rayong 21150
   Tel: +66 (0) 3892-2000
   Fax: +66 (0) 3892-5600
4th Branch: (Jetty and Buffer Tank Farm Branch)
19 Rong Pui Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong 21150
Tel: +66 (0) 3892 2750
Fax: +66 (0) 3892 2760

8. PTT Research and Technology, Wangnoi
URL: www.pttplc.com/en/
71 Moo 2, Phahonyothin Road km. 78,
Wangnoi, Ayutthaya 13170
Tel: 66(0) 2537-3000
Fax: 66(0) 2537-3000

9. Siam Mitsui PTA Co, Ltd. (SMPC)
Head Office:
The Siam Cement Public Co., Ltd. (Headquarter)
URL: www.siamcement.com
1 Siam Cement Road, Bangsue, Bangkok 10800 Thailand
Tel: 66 2586 4444, HomeMart Call Center Tel. 66 2586-2222

Rayong Plant:
8 Soi G-2 Eastern Industrial Estate, Prakornsongkroraj Rd., Huaypong, Muang District,
Rayong 21150

10. Thai Oil Public Co., Ltd.
URL: www.thaioil.co.th
Head Office:
123 Suntowers Building B, 16th Floor,
Vibhavadi Rangsit Road, Chomphon, Chatuchak,
Bangkok, 10900 Thailand
Tel: 66( 0) 2617-8300, +66(0) 2299-0000,
Fax: +66 (0) 2299-0024

Refinery:
42/1 Moo 1 Sukhumvit Road Km. 124,
Tungsukla, Sriracha, Cholburi 20230, Thailand
Tel: +66(0) 3840-8500, +66(0) 3835 9000, +66(0) 3835-1555
Fax: +66(0)3835 1554, +66(0) 3835-1444, +66(0) 3835-9019

11. Thai Plastic and Chemicals Public Co, Ltd. (TPC)
URL: www.thaiplastic.co.th
Head Office:
14-15th Floors, Rajanakarn Building
183 South Sathorn Rd., Yannawa
Sathorn, Bangkok 10120 Thailand
Tel: 66 (02) 676-6000
Fax: 66 (02) 676-6077

Samut Prakan Factory:
19 soi Tesaban Samrong Tai 21, Poochaosamingprai Rd.
Bangyapraek, Prapadaeng
Samut Prakan 10130 Thailand
Tel: 66 (02) 385-9459, 66 (02) 385-9468
Fax: 66 (02) 385-9458

Rayong Factory:
8, I-1 Rd., Mab Ta Phut Industrial Estate
Tambon Mab Ta Phut, Amphoe Muang
Rayong 21150 Thailand
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Fax: 66 (038) 683-392

12. Thai Polyethylene Co., Ltd. (TPE)

Head Office:
The Siam Cement Public Co., Ltd. (Headquarter)
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1 Siam Cement Road, Bangsue, Bangkok 10800 Thailand
Tel. 66 2586 4444, HomeMart Call Center Tel. 66 2586 2222
Rayong Plant
10 I-1 Road, Map Ta Phut Industrial Estate, Map Ta Phut, Muang District, Rayong
21150

13. PTT Aromatics and Refining Public Co., Ltd. (PTT-AR)
URL: www.pttar.co.th

Head Office:
555, 2nd Floor, PTTEP Office Building,
Vibhavadirangsit Road, Chatuchak,
Chatuchak, Bangkok 10900, Thailand.
Tel: 0-2537-5700
Fax: 0-2936-3097

Rayong Plant:
4, I-2 Road,
Map Ta Phut Industrial Estate,
Muang District, Rayong 21150, Thailand.
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Fax.: 0-3868-3695, 0-3868-3696