SiIT at Rangsit

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Vision

To be a leading international institute of technology for both teaching/learning and research

Missions

1. Primarily to produce high-quality bachelor’s degree engineers and related technologists who are able to handle advanced industrial technologies and use English as a working language
2. To educate graduate students to be able to conduct high quality and innovative research in engineering and related technological development
3. To conduct research and development in engineering and related technologies relevant to teaching, modern industries, and societal needs
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During the 9th Japan-Thailand Joint Trade and Economic Committee Meeting held in Kobe, Japan in 1989, the delegates from the Japan Federation of Economic Organizations (Keidanren - now Nippon Keidanren) and the Federation of Thai Industries (FTI) realized that in order to enhance industrial development of Thailand, engineering programs, where all lecture and laboratory courses would be taught in English by highly qualified faculty members with doctoral degrees, needed to be established.

A cooperation agreement among Keidanren, FTI, and Thammasat University was reached in 1992 to establish bachelor’s degree programs in engineering at Thammasat University with initial funds provided by Keidanren and FTI. After two years of successful operation, the "International Institute of Technology (IIT)" was founded on September 16, 1994. Her Royal Highness Princess Maha Chakri Sirindhorn graciously presided over the Cornerstone Laying Ceremony of a new building at the Rangsit Center of Thammasat University. His Majesty King Bhumibol Adulyadej of Thailand graciously granted the Institute a new name, "Sirindhorn International Institute of Technology (SIIT)," on June 28, 1996.

On October 2, 1997, Her Royal Highness Princess Maha Chakri Sirindhorn graciously presided over the Sirindhorn International Institute of Technology’s Inauguration Ceremony of its name and building. In 1999, FTI provided a parcel of land with an existing building at Bangkadi Industrial Park (BKD) for SIIT’s use for 30 years. In June 2001, the former Prime Minister Anand Panyarachun inaugurated a new building at Bangkadi for Information Technology and Computer Science programs.

Her Royal Highness Princess Maha Chakri Sirindhorn graciously presided over the inauguration of the Sirindhalai Building at Bangkadi on June 28, 2006. This new six-story building houses the School of Information, Computer, and Communication Technology (ICT), the School of Management Technology (MT), a library, a computer center, laboratories, and classrooms.

Backgrounds of the three founding organizations of Sirindhorn International Institute of Technology are briefly described as follows.

**Thammasat University**

Founded in 1934, Thammasat University was originally dedicated to the teaching of humanities and social sciences. The University has produced a large number of graduates who have greatly contributed to the development and progress of Thailand. Realizing the significant impact of science and technology on the country’s economic growth, in the 1980’s and 1990’s Thammasat University initiated degree programs in engineering, technology, physical sciences, and medical sciences at its Rangsit Center, Pathum Thani.
The Japanese Business Federation (Nippon Keidanren)

Through the merger of several economic and industrial organizations, the Japan Federation of Economic Organizations (Keidanren) was established in August 1946. Keidanren was a private, non-profit economic organization representing virtually all branches of economic activities in Japan. Keidanren has maintained close contact with both public and private sectors at home and abroad, and endeavored, not only to find practical solutions to economic problems, but also to contribute to the sound development of economies of Japan and countries around the world.

In May 2002, Keidanren merged with Nikkeiren (Japan Federation of Employer’s Associations) to become Nippon Keidanren (The Japanese Business Federation). Headed by internationally distinguished leaders of the Japanese business community, Nippon Keidanren plays an active and influential role towards the achievement of harmonious economic prosperity for all mankind.

The Federation of Thai Industries

Formerly known as the Association of Thai Industries (ATI), the Federation of Thai Industries (FTI) came into existence on December 29, 1987. It was a transformed body of ATI, which was created in 1967. FTI is an industrial private organization that brings together industrial leaders to promote Thailand’s socioeconomic development. The main objectives of FTI are to represent Thai manufacturers at both national and international levels, to help promote and develop industrial enterprises, to work with the government in setting up national policies, and to offer consulting services to members.

FTI is a full-service organization that cooperates with the government to help mobilize Thai industries to reach international markets. It acts as a "match-maker" between foreign industrialists and Thai resources, which combine the financial strength, planning ability, and persuasive power of Thailand’s industrialists.

Sirindhorn International Institute of Technology (SIIT) offers undergraduate and graduate programs (master and doctoral levels) leading to the Bachelor of Engineering (BEng), Bachelor of Science (BSc), Master of Engineering (MEng), Master of Science (MSc), and Doctor of Philosophy (PhD). The bachelor’s degree is offered in the following areas: chemical engineering (ChE), civil engineering (CE), computer engineering (CPE), electronics and communication engineering (EC), engineering management (EM), industrial engineering (IE), information technology (IT), management technology (MT), and mechanical engineering (ME).

SIIT offers three master of engineering programs, namely, Master of Engineering Program in Engineering Technology, Master of Engineering Program in Information and Communication Technology for Embedded Systems, and Master of Engineering Program in Logistics and Supply Chain Systems Engineering. It also offers a Master of Science Program in Engineering and Technology and Doctor of Philosophy Program in Engineering and Technology.

At the present time, the Institute has established faculty member, student and staff exchange programs with a number of universities in Asia, Australia, Europe, and North America. These programs allow, not only faculty members to collaborate with their counterparts in research projects, but also students to have an opportunity to take courses at those universities. Additionally, invitations to visit and teach SIIT courses are regularly extended to qualified foreign professors under such programs.

Although it is a unit of Thammasat University, SIIT is financially and administratively separate to a certain degree from the central university system. SIIT’s policies and operations are guided and supervised by the Board of Trustees which consists of representatives from Thammasat University, FTI, and Nippon Keidanren, and scholars appointed by the university. In addition, an academic committee, the Academic Review and Rank Assessment Committee (ARRAC), comprising reputable scholars in various fields, provides recommendations on rank promotions of faculty members and also reviews academic curricula. The Institute, headed by the Director, consists of administrative divisions, a library and information services center, five academic schools, and the Department of Common and Graduate Studies (CGS).

Operations of SIIT are carried out at two locations: Rangsit Campus (at the Rangsit Center of Thammasat University) and Bangkadi Campus (at Bangkadi Industrial Park).
Campus and Transportation

The Rangsit Center of Thammasat University (TU) is located at Km. 41 on Phaholyothin Road (northbound). The campus can be conveniently reached by car via a multi-lane divided superhighway (Phaholyothin), the Chaengwattana-Bangsai Expressway, and both outer East-Ring and West-Ring Highways. It can also be reached by buses No. 29, 39 (non-air-conditioned), and 510 (air-conditioned). The nearest train station, the Thammasat Station, is near the northwest corner of the Rangsit Campus.

Facilities

➢ Buildings

Two five-story buildings and one four-story building are located at the SIIT Rangsit Campus. The first building is the main building with an area of 20,677 m², housing offices and classrooms. The first floor and a section of the second floor are mainly occupied by the Library and Information Services Center, with an excellent collection of up-to-date textbooks, magazines, and journals. SIIT’s academic programs and faculty members’ offices, as well as the Computer Center and administrative divisions, are located on the second, third, and fourth floors. Classrooms of various sizes are on the third, fourth, and fifth floors of the building.

The second SIIT building, adjacent to the first one, is a five-story advanced laboratory building with a total area of about 3,000 m². It was dedicated by Keidanren and FTI to SIIT on October 6, 1998. The Advanced Laboratory Building houses laboratories for conducting senior projects of fourth-year students, research work of graduate students, and research projects of faculty members.

The third SIIT building, Edutivity, is a four-story building which is adjacent to the second one, with a total area of about 1,500 m². This building houses a student activities center and the office of the Building and Ground Division on the first floor, and classrooms of various sizes on the second, third, and fourth floors.

A new 8-storey Advanced Laboratory Building is under construction, which is expected to be completed by the early of the second semester of the 2017 academic year.

➢ Computer Center

The SIIT Computer Center is located on the third floor of the main SIIT building. The center is equipped with personal computers in four separate rooms, two of which are used mainly for instruction on programming, mathematical problem solving, engineering graphics design, and professional report preparation, while the other rooms are used by students for general computing purposes. Up-to-date software packages are installed via servers on the local area network, allowing students to become proficient with their applications. The local area network system supports both academic and administrative chores which include the library’s computer-based services, intranet, and the internal email system for faculty members and staff. There are a number of servers for academic purposes in various programs. The local area network is connected to the Internet via the Thammasat-Rangsit fiber optic backbone. Students, faculty members, and staff are provided with an individual email address and service. Wireless Internet (WiFi) is accessible from all areas of the SIIT buildings. A VPN service by which students can access SIIT’s online system from their homes is also available.

Information on the Institute can be viewed from the official web page at www.siit.tu.ac.th.

➢ Library and Information Services Center

The Library and Information Services Center is located on the first and second floors of the main building. The Library has an excellent collection of textbooks (in science and engineering), conference proceedings, reports, technical magazines, and journals. Electronic access to several international databases is provided. The Library also has a computerized search system to assist students in locating their information sources.
Students who would like to study by themselves or in groups will find it convenient to study in the Library. Individual study areas and group study areas are located on the first floor. For group discussion, students can meet and discuss in the group study rooms, which provide maximum privacy and minimum interference.

Furthermore, students can use the main TU library, which is also located at the university's Rangsit Center, for their study and literature searches on social sciences and humanities.

➢ **Infirmary**

The SIIT infirmary room is situated on the ground floor of the main building. It is staffed during office hours by a fully qualified nurse. The nurse can assist with minor medical problems and, for more serious cases, can arrange a timely transfer to Thammasat University Hospital.

➢ **Hospitals**

Thammasat University Hospital, located at the Rangsit Center, provides outpatient, inpatient, and emergency medical services, as well as other health care services such as X-ray, physical examination, and dental care. Physicians, nurses, and medical interns are available 24 hours a day. Students are eligible to receive discounts for room charges and services. There are also several private hospitals near the Navanakorn Industrial Estate, which is only a 5-minute drive from the Rangsit Center.

➢ **Student Activities Center**

A student activities center is located on the first floor of the SIIT Edutivity Building. There is a range of facilities available for student to use including air-conditioned meeting rooms, and a food and drink area. Student activities are coordinated by the Student Committee under the supervision of the Assistant Director for Student Affairs and Alumni Relations. All student activities must conform to SIIT and TU regulations.

➢ **University Bookstore**

The TU Bookstore at the Rangsit Center is well stocked with publications and magazines in both Thai and English languages. Textbooks used in individual courses can be purchased at the University Bookstore at competitive prices. Stationery and office supplies are also available.

➢ **Post Office**

The Thammasat-Rangsit Post Office is located at the Duen Bunnag Building. The post office offers complete postal services such as regular mail service, express mail service (EMS), registered mail service, package service, and money orders during business hours.

➢ **Convenience Stores**

Students living in the dormitories will find that shopping is quite convenient. Many convenience stores are located on campus, and nearby. At the Rangsit Campus of SIIT, there is a convenience store on the first floor of the Main Building.

➢ **Cafeterias and Canteens**

Several cafeterias and canteens can be found throughout the Rangsit Center. A variety of food is offered by vendors at reasonable prices, both on weekdays and weekends. Adjacent to the SIIT buildings is a cafeteria which serves both SIIT students and students of the Faculty of Engineering.

➢ **Banking Services**

For banking services such as cash withdrawal and balance inquiries, students can conveniently use the automated teller machines (ATMs) which are located at various locations on campus and at the SIIT main building. For full services, students can go to the on-campus branch offices of Bangkok Bank, Krung Thai Bank, and Thai Military Bank. Other banks with branches near the campus are Kasikorn Bank, Thanachart Bank, and Siam Commercial Bank.
➢ Dormitories

The Rangsit Center has on-campus dormitories for male and female students. Over 6,200 living units are available to accommodate students, faculty members, and university staff. Within walking and short-driving distances, many private dormitories can be found. These are co-ed dormitories, as well as dormitories with separate buildings for male and female students. Air-conditioned units with bathrooms are also available.

➢ Sport Facilities

The Rangsit Center has a wide range of sport facilities for students including swimming pools and practice fields for soccer, basketball, volleyball, and tennis, all of which are in the vicinity of the student dormitories. Areas for indoor sports such as badminton and table tennis are provided in the indoor gymnasiums. Students may also choose to exercise by biking, jogging, etc., especially in the morning since the air is very refreshing. In addition, the Rangsit Campus of SIIT has an outdoor basketball court in front of the main building.

Bangkadi Campus

Campus and Transportation

The Bangkadi Campus is located 14 kilometers from the Rangsit Campus on Tiwanon Road. The campus can be conveniently reached by SIIT shuttle bus and can also be reached by bus No. 6249 (non air-conditioned).

Facilities

➢ Buildings

In 1999, FTI, with co-operation from Toshiba Thailand Co., Ltd., and Mitsui & Co. (Thailand), Ltd., provided 5.6 rai (0.9 hectare) of land with an existing office building in the Bangkadi Industrial Park (BIP) for SIIT’s use for a period of 30 years. Later, SIIT purchased two more parcels of land in the industrial park with areas of 4 rai (0.64 hectare) and 5 rai (0.8 hectare). The existing building was renovated and enlarged. The new building, which is called the IT&MT building, has a combined area of approximately 3,300 m². The Computer Science and Information Technology programs moved to these new facilities in June 2002.

Another 6-story building with an area of 6,452 m² was completed in October 2004. Her Royal Highness Princess Maha Chakri Sirindhorn graciously granted the use of the name “Sirindhralai” for this new building and graciously presided over the inauguration of this new building on June 28, 2006. It houses the School of Information, Computer, and Communication Technology (ICT), the School of Management Technology (MT), the Library and Information Services Center, the Computer Center, classrooms, and laboratories.

The third SIIT building is the SIIT Administration and Training Building, located in front of the Bangkadi Industrial Park on Tiwanond Road. It is a four-story building which aims to be a research and training center. The first floor is for car parking. Bangkok Bank and Thanachart Bank are located on the second floor. On the upper floors, there are graduate student offices and research laboratories.

➢ Computer Center

A Computer Center office is located on the second floor of the Sirindhralai building. It supervises and maintains two laboratories for instruction and students’ use in mathematical and statistical problem solving, computer graphics, systems simulation, database applications and programming, computer networking, and general computing purposes. In addition, there are network access points in almost every room of the campus which connect to the Rangsit Campus of SIIT by a high-speed connection. Students can easily access the Internet either from their notebook computers, using wireless hotspots in every building, or from the computers in both the library and the computer laboratories.
➢ **Library and Information Services Center**

The Library at Bangkadi is located on the 3rd floor of the Sirindralai Building. The Library has an excellent collection of textbooks, technical books, conference proceedings, reports, technical magazines, and journals in the fields of electronics and communication, instrumentation and control systems, computer science, information technology, engineering management, and management technology. Computer facilities are provided for accessing the library database, online databases and full-text journals, and for self-study. The library also provides wireless facilities for students to access the Internet and online information sources with their personal notebook computers.

➢ **Infirmary**

The infirmary room is on the ground floor of the IT&MT building. A fully qualified nurse is in charge during weekdays to assist with minor medical problems and provide first-aid treatment.

➢ **Dormitory**

The SIIT International Residence at Bangkadi has two five-story buildings, one for male residents and another for female residents. There are 72 rooms on the 2nd-5th floors, which can accommodate up to 144 residents. Common rooms, canteen, and a launderette are located on the first floor, with a convenience store nearby. In addition, free internet Wi-Fi is provided for the residents on the ground floor.

➢ **Cafeteria and Canteen**

A variety of foods, snacks, and beverages are provided from vendors at reasonable prices at a cafeteria on the ground floor of the Sirindralai building. Additionally, there is a coffee shop on the ground floor of the IT&MT building which serves snacks and beverages.

➢ **Sport Facilities**

There is a soccer field behind the Sirindralai building. In addition, an outdoor basketball court is located next to the SIIT International Residence. There is a fitness center on the first floor of the SIIT International Residence. There is also a badminton gymnasium beside the dormitory buildings.

### STUDENT LIFE

SIIT students have many opportunities to participate in a variety of activities, both academic and extracurricular, to develop self-discipline, self-responsibility, professional attitudes, and for relaxation. The SIIT Student Committee and other student clubs such as the Sports Club, Music and Chorus Club, Academic Club, Volunteer Club, and Createch Club organize a wide range of programs and activities throughout the year. Additionally, individual academic programs have student clubs which collaborate with faculty members in academic related activities. Student activities are supervised by academic advisors and the Assistant Director for Student Affairs and Alumni Relations.

SIIT provides a stimulating international learning atmosphere. All courses, both lecture and laboratory, are taught in English by both foreign and Thai professors who have extensive overseas educational and work experiences. The number of international students at SIIT has been increasing due to SIIT’s widely accepted reputation for quality education and faculty members. Students frequently receive lectures on a variety of topics by visiting professors from abroad, providing them exposure to new and emerging subjects. Academic exchange programs with selected universities in Australia, Finland, France, Germany, Japan, Czech Republic, China, Denmark, Korea, the United Kingdom, Portugal, Taiwan, Switzerland and the United States of America have been established to provide qualified students with an excellent opportunity for studying abroad.
SIIT GRADUATES

Graduates of SIIT receive a wide range of job offers due to their proficiency in English and their competency in technical knowledge. While most graduates work for government agencies, state enterprises, and private corporations, a large number have chosen to pursue graduate studies immediately after graduation. Examples of universities that have accepted SIIT graduates into their graduate programs are University of Melbourne (Australia), University of New South Wales (Australia), RWTH Aachen University (Germany), Hokkaido University (Japan), Japan Advanced Institute of Science and Technology (Japan), Keio University (Japan), Kochi University of Technology (Japan), Kyushu University (Japan), Tohoku University (Japan), Tokyo Institute of Technology (Japan), University of Tokyo (Japan), Waseda University (Japan), Chalmers University of Technology (Sweden), Cambridge University (UK), Imperial College (UK), Oxford University (UK), University of Manchester Institute of Science and Technology-UMIST (UK), University of Nottingham (UK), University of Warwick (UK), Columbia University (USA), Georgia Institute of Technology (USA), Stanford University (USA), University of Colorado (USA), University of Michigan/Ann Arbor (USA), and University of Wisconsin/Madison (USA). Several graduates have received scholarships for their graduate studies, such as the Thai Government Scholarships, Japanese Government Scholarships, a Fulbright Scholarship, and teaching/research assistantships from the universities where they enroll.

ADMISSIONS

Each year the Institute’s faculty members and staff visit a number of high schools to provide information about the Institute, its admission procedures, academic programs, etc. The Institute also welcomes high school students and parents to visit the Institute. The Admission and Public Relations Division can help to arrange a meeting with faculty members and staff to discuss academic options for interested students.

For further information, contact: Admission and Public Relations Division
Sirindhorn International Institute of Technology (SIIT)
Thammasat University, Rangsit Center
P.O. Box 22, Thammasat-Rangsit Post Office
Pathum Thani 12121, Thailand.
Tel: +66-2-986-9009; +66-2-986-9011~3
Fax: +66-2-986-9112~3
E-mail: admission@siit.tu.ac.th
Website: http://www.siit.tu.ac.th
Online Application: www.siit.tu.ac.th/undergrad_app

Applicant’s Qualifications

- An applicant must earn a high school diploma that complies with the curriculum of the Ministry of Education (Thailand) or its equivalent from other countries (grade 12 or equivalent).
- An applicant must not carry any seriously contagious disease, or any disease that would be detrimental to his/her education, or any mental disorder.

Admission Methods

A prospective student may apply for admission through one of the following methods:

1. SIIT Entrance Examination and Outstanding Student Program (OSP)
   (The written portion covers Mathematics, Physics or General Science, and English)
2. Thammasat University Entrance Examination (TU STAR)
3. Submission of National Test Scores:
   - GAT/PAT
   - Common 9 Subjects
4. Submission of Standardized Test Scores:
   - Scholastic Aptitude Test I (SAT I)
   - American College Testing (ACT)
• International General Certificate of Secondary Education (IGCSE) or General Certificate of Secondary Education (GCSE) or General Certificate of Education (GCE), ‘O’ or ‘A’ Level
• International Baccalaureate (IB) Diploma
• 6th Form or 7th Form, NZQA, NCEA

5. Central University Admission System (CUAS)
6. Transfer from other accredited universities

Application

Applicants who wish to apply through the national university entrance selection process must follow the procedures set by the Office of the Higher Education Commission. Those who choose the other methods must complete the online application by the deadlines and bring the required documents on the Interview date. Announcement of application periods are available on the SIIT website.

Application Fee

Prospective students may apply online on the SIIT Website (www.siit.tu.ac.th/undergrad_app).

The application fees are as follows:
• OSP (Outstanding Student Program) = 500 Baht
• SIIT Entrance Examination = 800 Baht
• Submission of National Test Scores and Standardized Test Scores = 800 Baht
• Transfer Student = 800 Baht

Student can transfer the application fee to one of the following bank accounts;

Bank of Ayudhya
Account Name: Sirindhorn International Institute of Technology
Branch: Navanakorn
Account Type: Saving Account Number: 258-1-09848-8

Thai Military Bank
Account Name: Sirindhorn International Institute of Technology
Branch: Thammasat Rangsit
Account Type: Saving Account Number 050-2-08189-6

Remark: For US Dollars, please make a payment by bank transfer only.
Beneficiary’s bank: Thai Military Bank, Thammasat Rangsit branch
99 Moo 18, Phahonyothin Road, Khlong Nueng, Khlong Luang, Pathum Thani, 12120, Thailand
Beneficiary’s name: Sirindhorn International Institute of Technology
Account No.: 050-2-08189-6
Swift transfer: TMBKTHBK

Interview

All candidates who have passed the written examination or the initial screening are interviewed by faculty members. The interview is conducted in English.

English Placement Test

All admitted students are given an English Placement Test to determine their English language proficiency. Depending upon their level of proficiency, they may receive exemption of some English courses, or may be required to take an additional English course.

Exemption: An applicant who is a native English speaking student from Australia, Canada, New Zealand, United Kingdom, or USA may be exempted from the above English proficiency requirements if he/she passes an interview by an SIIT interviewing committee consisting of 3 English native speaking instructors.
Non-Degree Enrollment

Students or interested individuals may apply to register for courses as non-degree students.

Tuition fees:  3,800 Baht per Lecture Credit
             5,000 Baht per Lab Credit

TUITION AND EDUCATIONAL SUPPORT FEES

Sirindhorn International Institute of Technology reserves the rights to revise the tuition and educational support fees and to establish new fees as may be required by increased costs of providing educational services.

Tuition Fees

Tuition fees include charges for services directly and indirectly related to instruction, such as classroom facilities, lecturing, publications, counseling, placement, etc., but does not cover the cost of damage to or loss of university property.

Tuition fees:  3,100 Baht per lecture credit
             4,200 Baht per laboratory credit

Educational Support Fees

These fees provide funds for library, computer facilities, equipment, student services and activities, athletic facilities, etc.

Fees:  27,805 Baht per semester

Approximately, the total tuition and educational support fees per semester is 97,165 Baht. The actual amount depends on the number of credits registered in each semester.

Damage Deposit

A deposit of 5,000 Baht is collected from a new student for damaged equipment and non-returned library books. The deposit, after reduction of damages caused by the student, is returned to the student when he/she graduates or leaves SIIT.

Matriculation Free

A one-time fee of 400 Baht is collected by TU as the matriculation fee.

Fine on Unpaid Fees

Any outstanding balance of the tuition and educational support fees will be charged a fine at the rate of 0.05% per day starting from the first day after the addition/withdrawal period and at the rate of 0.1% per day starting from the first day of the midterm exam.

Status Maintaining Fee

A fee of 5,000 Baht per semester is charged during a student’s leave of absence.

Reinstatement Fee

A student who has resigned or has been dismissed due to non-academic reasons may apply for readmission. A fee of 2,500 Baht is charged for readmission, in addition to payment of any previous outstanding debt.

Late Registration Fee

A fee of 45 Baht per day is charged for late registration.

Students may be subject to other fees such as a fee for late return of borrowed books, etc. For details, consult the Academic Services and Registration Division, Student Affairs and Alumni Relations Division, or Finance Division.

Financial Aid

Each year, the Institute has set aside a number of scholarships and awards for students who have demonstrated academic excellence, have strong financial needs, or both. In addition to these scholarships arranged by the Institute, the public/private sector and individuals have provided support through scholarships for students each year. The scholarship recipients are screened by a committee and selected on the basis of academic records, conduct, financial need, and conditions set by the scholarship donors.

Currently, the Institute receives scholarships and/or donations to the Sirindhorn Technology Scholarship Fund from individuals, institutions, and business corporations, for example:
A scholarship recipient’s academic progress is reviewed at the end of each semester to determine the recipient’s continued eligibility for an award. For further information on scholarships, contact the Student Affairs and Alumni Relations Division.

ACADEMIC POLICIES AND PROCEDURES

Sirindhorn International Institute of Technology (SIIT), although independently administered and self financed, is an academic unit of Thammasat University. Graduates of the Institute receive Thammasat University degrees. Thus, students must comply with the policies and regulations set forth by the University. For more details, consult the student’s academic advisor.

Students must successfully complete the required number of credits (set by each academic curriculum) and demonstrate their English proficiency to be eligible for graduation. Some students who do not possess sufficient background may be required to take additional courses not listed in the curriculum. Normally, it takes eight regular semesters (four years) to complete the requirements. The schedule of academic semesters is as follows:

First Semester: August - December
Second Semester: January - May
Summer Session: June - July

ACADEMIC REGULATIONS

Student Dress Code

All students are encouraged to wear Thammasat University (TU) uniforms, which are as follows:

1. Men’s uniform:
   - Plain white shirt (shirt must be properly tucked in and sleeves must not be folded back)
   - Trousers in black or dark blue
   - Belt with TU belt buckle
   - Black shoes with socks

2. Women’s uniform:
   - Plain white shirt with short sleeves (shirt must be properly tucked in)
   - Buttons: at the shirt seam binding (4 buttons) and shirt collar (1 button) using TU silver metal buttons
   - TU pin worn on the left side of shirt above the chest
   - Plain skirt in black or dark blue
   - Belt with TU belt buckle
   - Black shoes

A TU pin is a yellow “Thammajuk” with red lines, available at the University Bookstores. A TU belt buckle is a “Thammajuk” in a rectangular shape, also available at the University Bookstores.

In the case that it is inconvenient to wear a uniform, students may wear polite dress as follows:
Men - Plain shirt with collar and short or long sleeves, properly buttoned and tucked in
- Trousers in dark color
- Shoes (sandals are not allowed during official hours on campus)

Women - Plain shirt with collar and short or long sleeves
- Plain skirt in dark color
- Shoes (sandals are not allowed during official hours on campus)

Dress Code for Taking Examinations

- All SIIT students are required to wear TU student uniforms.
- Other types of dresses, including any kind of jeans, are not allowed.
- Students are required to wear dress shoes (closed toes and heels) or sport shoes (plain: white, black, brown, or navy blue). Other types of shoes and colors are not allowed.
- Failure to comply with this dress code will result in a deduction of student conduct score and other penalties.

Conduct Score and Disciplinary Actions

Students who are found “improperly dressed” or “smoking in a non-smoking area” will be deducted conduct scores as follows:

<table>
<thead>
<tr>
<th>Offence</th>
<th>Conduct Scores to be Deducted</th>
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<tr>
<td></td>
<td>Improperly Dressed</td>
</tr>
<tr>
<td>1st Offence</td>
<td>0</td>
</tr>
<tr>
<td>2nd Offence</td>
<td>10</td>
</tr>
<tr>
<td>3rd Offence</td>
<td>10</td>
</tr>
<tr>
<td>4th Offence</td>
<td>20</td>
</tr>
<tr>
<td>5th Offence</td>
<td>30</td>
</tr>
<tr>
<td>6th Offence</td>
<td>30</td>
</tr>
</tbody>
</table>

The following disciplinary actions will be taken upon the cumulative deducted scores:

<table>
<thead>
<tr>
<th>Offence #</th>
<th>Smoking</th>
<th>Improper Dress</th>
<th>Cumulative Deducted Scores</th>
<th>Disciplinary Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>1</td>
<td>0</td>
<td>Action 1: Verbal and written warning 1, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Permission to attend a class or laboratory, or get service from library is revoked.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- No prompt service from SIIT faculty and/or staff members</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- No consideration for scholarships and awards for 1 academic year (Except for the Good Academic Performance and Good Conduct Scholarships)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>10</td>
<td>Action 2: Verbal and written warning 2, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Action 1</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>20</td>
<td>Action 3: Verbal and written warning 3, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Action 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- No re-entry and re-admission to SIIT</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>40</td>
<td>Action 4: Written probation signed by student and guardian</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Action 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Granting of scholarship and residing at campus-dormitory will be revoked.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- No issue of recommendation letter and activity transcript</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>70</td>
<td>Action 5: Suspension from study for 1 semester</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Action 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Suspension from study for one semester (next semester), except for a student studying in the last semester, in which case the student is suspended in the semester of the offence.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>100</td>
<td>Action 6: Postponement of graduation approval for 1 academic year</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Action 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Postponement of graduation approval for 1 academic year</td>
<td></td>
</tr>
</tbody>
</table>
Registration for New Students

1. A successful applicant must possess all qualifications set by Sirindhorn International Institute of Technology.
2. A successful applicant must register in person as a Thammasat University student during the registration period scheduled by the Institute.
3. A successful applicant who cannot register during the scheduled period is required to submit a written statement of the reason for his/her absence to the Admission and Public Relations Division by the last day of the regular registration period. Otherwise, such an applicant will be considered as renouncing his/her rights to register. After obtaining an approval for late registration, the applicant must register within the first 14 days of the current semester; otherwise, his/her rights to register as a student will be revoked.

Registration for Current Students

1. An undergraduate student is required to register for a minimum of 9 credits and a maximum of 22 credits in each regular semester. Registration for fewer than 9 credits is possible only by the director’s approval and with a special reason, such as illness or anticipation of graduation at the end of the current semester. A fourth year student may able to register for more than 22 credits with the rector’s approval. The number of credits registered in the summer session shall not exceed 6 credits.
2. A student must register during the scheduled period and follow the registration procedures set by the Institute.
3. Course registration must be approved by the academic advisor.
4. Late registration is subject to a fine of 45 Baht/day (including holidays), starting from the first day of classes. Course registration after the first 14 days of a semester will not be allowed unless special permission is obtained from the director. However, a student who has been awarded a scholarship for studying abroad will be granted permission to register without fines after the registration deadline, but this must be completed within the first 4 weeks of a semester.
5. A student who does not register for any courses in a regular semester has to file an application for leave of absence to the academic program and pay a fee for maintaining student status within the first 30 days of a semester; otherwise his/her student status will be revoked.
6. Registration for courses is considered incomplete until fees have been paid by the specified date.
7. The number of students enrolling in a course may be restricted due to some constraints, such as limited laboratory equipment and classroom size.

Auditing a Course

1. With permission from the instructor and the advisor, a student may audit a course without evaluation. The student must pay the tuition fee for the course.
2. Auditing may not be changed to regular evaluation after the second week of a regular semester.
3. A grade report will bear “AUD” for the audited course after such a course is completed.
4. The number of credits for an audited course will be counted towards the upper limit of the number of credits allowed in a semester, but will not be counted towards the lower limit.
5. The credit(s) of an audited course will not be counted towards the total credit accumulation.
6. An audited course cannot be re-registered for at a later time for formal evaluation unless there is a change in the student’s study program that warrants the need for formal evaluation of the course.

Course Addition/Withdrawal

1. If authorized by the advisor, course addition must be processed within the first 14 days of a regular semester or within the first 7 days of a summer session.
2. If authorized by the instructor and the advisor, course withdrawal will result in one of the following cases:
   2.1 If a course is withdrawn within the first 14 days of a regular semester (7 days for a summer session), the academic record will not bear the title of such a course.
   2.2 If a course is withdrawn after the first 14 days (7 days for a summer session) but not later than the first twelve weeks of a regular semester (4 weeks for a summer session), the academic record will bear the title of the course and a W grade.
   2.3 Course withdrawal after the first 12 weeks of a regular semester (4 weeks for a summer session) is not allowed unless special permission is obtained from the director. With approval from the director, the course will bear a W grade.
3. A withdrawal that reduces the number of credits to less than 9 credits is prohibited.
Leave and Suspension

1. A student can apply for a leave of absence. This must be approved by the director on the condition that the student has an appropriate reason. However, a student cannot take a leave during the first two semesters of his/her undergraduate study unless the Rector of Thammasat University approves the request.
2. A student cannot apply for leave for more than two consecutive semesters unless the Rector of Thammasat University specially permits it.
3. A leave will result in one of the following cases:
   3.1 If the first day of leave falls within the first 14 days of a regular semester, the academic record will not bear any of the titles of the registered courses.
   3.2 If the first day of leave falls after the first 14 days, but no later than the first 12 weeks of a regular semester, the academic record will bear W grades for all the courses registered in the current semester.
   3.3 A student can apply for leave after the first 12 weeks of a regular semester only if there is an uncontrol lable reason. A student or a student’s trustworthy representative is required to submit an application for leave with credible evidence to the academic program.
4. A student who is suspended from studying during a semester due to disciplinary cause will not be permitted to take the final examination. This penalty will be recorded on the student’s academic record. No grades or credits for the courses registered in the current semester will be given. A suspended student must pay a fee for maintaining his/her student status, unless he/she has paid the educational support fees.
5. A student who is permitted to take a leave or is suspended before paying the educational support fees must pay a fee for maintaining his/her student status.
6. Leave, suspension, or re-admission cannot be used as a reason to extend the maximum limit of 7 years to complete the degree requirements.

Reinstatement

A student who has been dismissed for a reason other than not meeting academic performance, such as failure to register within the time limit of a semester or has not paid a debt owed to SIIT, may request for re-admission by submitting a request to the Academic Services and Registration Division. If approved, the semesters in which the student did not register are treated as semesters that the student has taken leave. To process the request, all previous outstanding debts, status maintaining fees, and reinstatement fees must be paid. Reinstatement has to be approved by the Rector of Thammasat University.

Refund of Fees

1. The educational support fees are non-refundable.
2. A student who withdraws from a course due to cancellation by the Institute is entitled to a full refund of the tuition fee.
3. A student who withdraws from a course within the first 14 days of a regular semester (7 days for a summer session) is entitled to a half refund of the tuition fee.
4. A student who withdraws from a course after the first 14 days of a regular semester will not receive any refund for the tuition fee.
5. A student who takes a leave by the first 14 days of a semester is entitled to a half refund of the tuition fee. A student taking a leave after the first 14 days of the semester will not receive any refund for his/her tuition fee, but does not need to pay a fee to maintain his/her student status.

Regulations on the Use of the Library

All students must observe the following Library’s regulations:
1. Students are entitled to check out no more than 5 books from the library at any given time and they must return the books within 7 days, starting from the check-out date.
2. Any student who returns a book(s) after the due date will be fined: 10 Baht/day per copy of a book, 20 Baht/hour per copy of a reserved book.
3. Students must reimburse the Institute for loss or damage of a book they have checked out from the library.
4. Eating, drinking, smoking, and making excessive noise are strictly prohibited in the library.
5. Students are not permitted to remain in the library after the service hours. For more details, consult the librarian for the semester service hours.
6. As a deterrent measure, violators will not be entitled to receive any services from the library throughout the current semester.

7. In the case that students do not return a book within the due date and do not pay the fine for overdue books, they will not be allowed to check out any additional books or register in the following semester.

**Academic Performance**

1. The academic performance of students is evaluated using the grade point average (GPA) system. The following grades are used:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Point</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.0</td>
<td>Excellent</td>
</tr>
<tr>
<td>B+</td>
<td>3.5</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
<td>Good</td>
</tr>
<tr>
<td>C+</td>
<td>2.5</td>
<td>Fair</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
<td>Minimum</td>
</tr>
<tr>
<td>D+</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0.0</td>
<td>Fail</td>
</tr>
</tbody>
</table>

In some courses, such as practical training, an S (satisfactory) or U (unsatisfactory) grade is given. These grades have no point values. Therefore, they are not included in the calculation of semester and cumulative grade point averages (CGPA).

An “I” grade may be temporarily given for courses where coursework evaluations have not been completed and it is not the student's fault. Issuance of this grade is very rare and must be based on circumstances that are beyond the control of the involved student.

The student with an “I” grade must be evaluated by the course instructor within 80 days after the semester ends. If a complete evaluation is not possible, the instructor must grade the student’s performance based on his/her available scores obtained from previous evaluation assignments of the course. Beyond the 80-day period, if no grade is given by the instructor, the grade must be considered by the institute. In any case, the “I” grade must be removed within 90 days after the semester ends, otherwise a “W” grade is given.

Course withdrawals after the first two weeks but still within the first twelve weeks are given a W grade. No withdrawals are permitted after twelve weeks of a regular semester, except under special circumstances.

2. A placement test of some courses can be substituted for a regular evaluation. A student whose placement test result is “Accredit” will earn the credits without having to study such a course, and his/her academic record will bear “ACC,” which carries no grade point and will not be used in the calculation of a GPA.

3. A student may retake a course in which he/she received a grade of D or D+. All the grades received in the same subject will be used for the calculation of the cumulative grade point average, but the credits will be earned only once.

4. An F grade will be counted as zero points and the course credits will be used for the calculation of both the semester and the cumulative grade point averages.

5. A compulsory course with either an F or a U grade must be retaken until a passing grade is obtained.

6. A student may choose to retake an elective course with either an F or a U grade or to take another course instead.

7. Only courses that are given at least a D grade or an S grade or “ACC” are counted towards earned credit accumulation.

8. In the case that a student is required to repeat a course or take another course as a substitute, the credit(s) of such a course will be accumulated only once.

9. A student who misses an examination due to an uncontrollable cause must immediately submit evidence stating the cause of his/her obstacle to the instructor and his/her advisor for initial consideration. If the matter is deemed adequate and approved by the instructor, the instructor and the advisor will submit the matter to obtain the director's approval for arranging an appropriate process in accordance with the SIIT Examination Regulations for SIIT students.

10. The maximum time limit to complete a bachelor's degree is 7 years.
Warning and Probation Status

1. The Institute will evaluate the status of each student based on his/her academic performance at the end of every semester. Each student must maintain CGPA of at least 2.00. Otherwise, he/she will be issued a “warning 1,” “warning 2,” or “probation” status in the following semester, wherever appropriate. Grades of the summer session are considered as a part of the second semester’s grades. However, for students who are dismissed at the completion of the second semester, their registration of the following summer session will be void.

2. At the end of the first two semesters of his/her undergraduate study, the student must possess a CGPA of at least 1.50. Otherwise he/she will be dismissed from the Institute.

3. A “warning 1” status will be issued in the following semester if the CGPA falls below 2.00 for the first time. A “warning 2” status is issued in the following semester if a student is under the “warning 1” status and still cannot improve the CGPA to 2.00 or above.

4. If a student has a “warning 2” status and still possesses a CGPA below 2.00, he/she will be issued a “probation” status in the following semester which will be recorded in the student’s academic record.

5. A student under the “probation” status must improve his/her CGPA to 2.00 or above by the end of that semester. Otherwise, he/she will be dismissed from the Institute.

6. If a student has completed all the courses required by the curriculum but his/her CGPA is below 2.00 but not less than 1.80, then he/she is allowed to continue taking courses for no more than 3 semesters (subject to a total time limit of 7 years for the entire enrollment) to improve the CGPA to 2.00 or above.

Class Attendance

Students are required to attend a class for not less than 70 percent of the total class periods throughout a semester. If the attendance is less than 70 percent, he/she may not be allowed to take the final examination of that course.

Transfer Students

A student may be admitted as a transfer student if he/she has previously enrolled in a Bachelor’s degree program. The total number of transfer credits cannot exceed half of the total number of credits required by the SIIT program.

A request for transferring credits must be done within the first registered semester. No transfer credits can be granted if the student has been dismissed from an institution.

Application for Graduation

1. To qualify for graduation, a student must fulfill the course requirements of the curriculum with a minimum CGPA of 2.00, and demonstrate his/her English proficiency with:

   - a paper-based TOEFL score of at least 500 (or 173 for computer-based test or 61 for Internet-based test or 500 for Institutional TOEFL), or
   - IELTS of at least 6.0, or
   - TUGET of at least 500, or
   - TOEIC of at least 650, or
   - First Certificate in the English (FCE) in Cambridge ESOL Exam, or
   - Level B2, Grade "B" in the Council of Europe’s Common European Framework of Reference (CEFR), or
   - Grade "S" in GTS401 Intensive English Proficiency.

In addition, the student must have been enrolled for no fewer than 7 regular semesters, except for transfer students.

Exemption: An applicant who is a native English speaking student from Australia, Canada, New Zealand, United Kingdom, or USA may be exempted from the above English proficiency requirements if he/she passes an interview by an SIIT interviewing committee consisting of 3 English native speaking instructors.
2. A graduate is granted a degree with honors if he/she has earned at least 3/4 of the total required credits from SIIT/TU and meets the following conditions:

**First Class Honors**
1. The study is completed within the time specified by the curriculum.
2. The final cumulative grade point average is not lower than 3.50.
3. None of the courses is given a U grade or a grade lower than C.
4. None of the courses has been repeated.

**Second Class Honors**
1. The study is completed within the time specified by the curriculum.
2. The final cumulative grade point average is not lower than 3.50.
3. The cumulative grade point average of the courses in the major is not lower than 2.00.
4. None of the courses has been repeated, or given an F grade or a U grade.

In addition, a graduate possessing the following eligibility is also qualified for second class honors.

1. The study is completed within the time specified by the curriculum.
2. The final cumulative grade point average is not lower than 3.25.
3. None of the courses in the major is given a grade lower than C.
4. None of the courses has an F grade or a U grade.

3. Application for graduation must be submitted to the university within the first 14 days of the final semester (7 days of the summer session) which an applicant expects to graduate.
4. If a student financially owes SIIT or the university, all his/her debt must be cleared before applying for graduation.

**Degree Approval**

1. The Thammasat University Council normally approves degrees at the end of the first and second semesters, and the summer session.
2. The university organizes a graduation ceremony once a year.

**ACADEMIC PROGRAMS**

SIIT offers international programs leading to Bachelor of Engineering (B.Eng.) and Bachelor of Science (B.Sc.) in the following fields:

**B.Eng.**
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electronics and Communication Engineering
- Industrial Engineering
- Mechanical Engineering

**B.Sc.**
- Information Technology
- Management Technology
- Engineering Management

The structure and components of individual curricula of the undergraduate programs are listed below.

1. General Basic Courses

   1.1 Part I
   1.1.1 Humanities
   1.1.2 Social Sciences
   1.1.3 Languages
   1.1.4 Science and Mathematics

   1.2 Part II
2. Core Courses
   2.1 Compulsory Courses
   2.2 Compulsory Elective Courses
   2.3 Technical Elective Courses (Optional)

3. Free Elective Courses

Pre-Mathematics and Sciences, and English I are provided to 1st year students who are required to strengthen knowledge in these subjects.

A practical training course is normally offered during the summer session of the third academic year of the curriculum. Students are placed at business corporations, government agencies, or industrial facilities to receive on-the-job training and to learn to adapt to the work environment.

Instead of the practical training course, students may be approved to enroll in an extended training program in the second semester of the fourth year, with continuation into the following summer session. During the training, students usually work on a project which addresses and solves a technical problem in industry.

SIIT has established student exchange programs with many foreign universities and organizations. Qualified students may take advantage of these programs. Students may request that credits of courses taken during the exchange period be transferred. In some cases, there is some financial assistance.

Details of the curriculum for each academic program are given in the following pages. For additional information, students may consult the individual programs.
Chemical engineering (ChE) is a branch of engineering that deals with the chemical and physical processes used to develop and make products such as pharmaceuticals, artificial organs, semiconductors, oil refineries, solar panels, clean water, and biocompatible polymers. Chemical engineers have made major contributions to modern society. With the additional knowledge of biology, chemical engineers are devising new ways for living organisms to perform molecular transformation, and discovering new schemes for delivery of medicines to specific sites in the body.

The Chemical Engineering Program intends to prepare chemical engineers for life-long achievement through education in the principles of chemical engineering: to encourage development of communication, teamwork, and leadership skills.

The basic foundation in mathematics, chemistry, physics, and engineering is established in the first two years of the curriculum. A core of required chemical engineering courses is followed by a selection of electives. One group of electives will prepare students to be biochemical engineers, and another group to be chemical process and material engineers.

In addition, ChE students can choose one among three special study (Senior Project, Foreign Exchange, and Extended Training).

- **Senior Project** is for students who would like to conduct their projects under the supervision of ChE faculty members.

- **Foreign Exchange** is designed for students who would like to participate in a student exchange program with foreign partner universities.

- **Extended Training** is designed for students who would like to participate in a longer training period (for the entire semester) under a co-operative training program with companies or organizations.

### Structure and Components

1. **General Basic Courses**

   - **Part I**
     - Humanities (1 course)
     - Social Sciences (2 courses)
     - Languages (3 courses)
     - Science and Mathematics (2 courses)
   - **Part II**
     - 9 Credits

2. **Major Courses**

   - **Basic Courses**
     - Basic Mathematics and Science Courses
     - Basic Engineering Courses
   - **Specialized Courses**
     - Compulsory Engineering Courses
     - Elective Engineering Courses
   - **Elective Courses**
     - Special Study
     - Optional Courses
     - Technical Elective Courses

3. **Free Elective Courses**

### Details of the Curriculum

1. **General Basic Courses**

   - **Part I**
     - Humanities
     - Social Sciences
     - Languages
     - Science and Mathematics
   - **Part II**
     - 9 Credits

2. **Major Courses**

   - **Basic Courses**
     - Basic Mathematics and Science Courses
     - Basic Engineering Courses
   - **Specialized Courses**
     - Compulsory Engineering Courses
     - Elective Engineering Courses
   - **Elective Courses**
     - Special Study
     - Optional Courses
     - Technical Elective Courses

3. **Free Elective Courses**

### Total Credit Requirement

- **147 Credits**
### ChE Curriculum: 147 Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits (lecture-practice-self study hours)</th>
<th>Course</th>
<th>Credits (lecture-practice-self study hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester I</strong></td>
<td></td>
<td><strong>Semester II</strong></td>
<td></td>
</tr>
<tr>
<td>EL171 English Course II</td>
<td>3(3-0-6)</td>
<td>CHS317 Safety in Chemical Operations</td>
<td>3(3-0-6)</td>
</tr>
<tr>
<td>GTS132 Introduction to Biological Science</td>
<td>3(3-0-6)</td>
<td>CHS353 Mass Transfer</td>
<td>3(3-0-6)</td>
</tr>
<tr>
<td>MAS116 Mathematics I</td>
<td>3(3-0-6)</td>
<td>CHS363 Chemical Engineering Laboratory II</td>
<td>1(0-3-0)</td>
</tr>
<tr>
<td>SCS126 Chemistry for Engineers</td>
<td>3(3-0-6)</td>
<td>CHS355 Chemical Engineering Process Design</td>
<td>3(3-0-6)</td>
</tr>
<tr>
<td>SCS138 Applied Physics I</td>
<td>3(3-0-6)</td>
<td>CHS364 Experimental Design and Methods for Chemical Engineering</td>
<td>3(3-0-6)</td>
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<tr>
<td>SCS176 Chemistry Laboratory</td>
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<td></td>
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<tr>
<td>SCS183 Physics Laboratory I</td>
<td>1(0-3-0)</td>
<td>CHS32x Optional Course</td>
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<td>TU130 Integrated Sciences and Technology</td>
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<td><strong>Sub-Total</strong></td>
<td>18(17-3-34)</td>
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<tr>
<td>TU100 Civic Education</td>
<td>3(3-0-6)</td>
<td><strong>Semester II</strong></td>
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<tr>
<td><strong>Sub-Total</strong></td>
<td>22(20-6-40)</td>
<td>EL172 English Course III</td>
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<tr>
<td><strong>Second Year</strong></td>
<td></td>
<td>GTS133 Environmental Studies</td>
<td>3(2-2-5)</td>
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<tr>
<td><strong>Semester I</strong></td>
<td></td>
<td>ITS100 Introduction to Computer and Programming</td>
<td>3(2-3-4)</td>
</tr>
<tr>
<td>CHS211 Organic Chemistry</td>
<td>3(3-0-6)</td>
<td>MAS117 Mathematics II</td>
<td>3(3-0-6)</td>
</tr>
<tr>
<td>CHS241 Material and Energy Balance</td>
<td>3(3-0-6)</td>
<td>SCS139 Applied Physics II</td>
<td>3(3-0-6)</td>
</tr>
<tr>
<td>CHS316 Statistics for Chemical Engineering</td>
<td>3(3-0-6)</td>
<td>SCS184 Physics Laboratory II</td>
<td>1(0-3-0)</td>
</tr>
<tr>
<td>ECS203 Basic Electrical Engineering</td>
<td>3(3-0-6)</td>
<td>TU140 Thai Studies</td>
<td>3(3-0-6)</td>
</tr>
<tr>
<td>GTS202 English Language Structures</td>
<td>3(3-0-6)</td>
<td><strong>Sub-Total</strong></td>
<td>19(18-3-36)</td>
</tr>
<tr>
<td>MAS210 Mathematics III</td>
<td>3(3-0-6)</td>
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<td></td>
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<td>MES300 Engineering Drawing</td>
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The Civil Engineering Program aims to produce graduates with sufficient fundamental knowledge in broad fields, and at the same time with strong knowledge in a specific area. This will enable graduates to serve the industrial sectors in Thailand where the need for specialists is increasing day by day. In this curriculum, two main areas of study are provided for selection. They are 1) general civil engineering, and 2) infrastructure engineering.

The general civil engineering option gives emphasis to various major fields of civil engineering, which include 1) structural engineering, 2) concrete engineering, 3) soil and foundation engineering, 4) water resources engineering, and 5) transportation engineering. The infrastructure engineering option, though still concentrating on the above major fields, puts more emphasis on knowledge related to infrastructure.

The total credits for major engineering subjects in both options are uniformly distributed to all five major fields, except for the field of structural engineering which has a slightly larger number of credits. For students in the infrastructure engineering option, a few major courses provided in the general civil engineering option are replaced by courses related to the infrastructure engineering field.

Further specialization can be achieved through the elective courses and the project. A practical training course is also provided to let students have a chance to practice civil engineering during their studies. In the practical training course, students will be placed in organizations that are related to their specialty in order to provide them with some practical experiences in their specialized field. In this curriculum, it is possible for students to study their elective courses at other universities, including foreign universities, as exchange students during the final semester. With special arrangements, it will also be possible for students to have thorough practical training during the final semester.

### Structure and Components

#### 1. General Basic Courses

<table>
<thead>
<tr>
<th>Component</th>
<th>Credits</th>
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<tr>
<td>1.1 Part I</td>
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<td>1.1.1 Humanities</td>
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<td>1.1.2 Social Sciences</td>
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<td>1.1.3 Languages</td>
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#### 2. Major Courses

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<td>2.1 Basic Courses</td>
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<td>2.1.1 Basic Mathematics and Sciences Courses</td>
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<td>2.1.2 Basic Engineering Courses</td>
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<td>2.2 Specialized Courses</td>
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<tr>
<td>2.2.1 Compulsory Engineering Courses</td>
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#### 3. Free Elective Courses

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<tr>
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Total Credits: 150

### Details of the Curriculum

1. **General Basic Courses**: 30 Credits
   - 1.1 Part I: 21 Credits
     - 1.1.1 Humanities: 2 Credits
     - 1.1.2 Social Sciences: 5 Credits
     - 1.1.3 Languages: 9 Credits
     - 1.1.4 Science and Mathematics: 5 Credits
   - 1.2 Part II: 9 Credits

2. **Major Courses**: 114 Credits
   - 2.1 Basic Courses: 52 Credits
     - 2.1.1 Basic Mathematics and Sciences Courses: 21 Credits
     - 2.1.2 Basic Engineering Courses: 31 Credits
   - 2.2 Specialized Courses: 62 Credits
     - 2.2.1 Compulsory Engineering Courses: 40 Credits
     - 2.2.2 Elective Engineering Courses: 22 Credits

3. **Free Elective Courses**: 6 Credits

Total Credit Requirement: 150 Credits
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<td>SCS126 Chemistry for Engineers</td>
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<td>EL172 English Course III</td>
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<td>CES201 Engineering Materials</td>
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## Computer Engineering (CPE)

### Curriculum Outline

The computer engineering curriculum is designed to prepare students for new trends in hardware and software development, as well as frontiers in computing technology. Students will be exposed to a wide range of subjects covering all aspects of computer engineering and their applications. Emphasis is put on foundations of intelligent system development and techniques related to pervasive technology.

The compulsory core courses help students to:

1. Gain fundamental concepts related to computers and information technology that lead to high performance digital processing,
2. Know the essence of hardware and software systems that leads to the effective and efficient development of computer systems, and
3. Understand applications of fundamental knowledge to frontier multi-disciplinary fields.

After gaining enough background through the compulsory core courses, the students are allowed to tailor their courses according to their personal interest. Twelve credits of elective courses, which are required for graduation, can be selected from one of these:

1. Intelligent Systems,
2. Pervasive Technology, or
3. General Computer Engineering

### Structure and Components

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<th>Component</th>
<th>Credits</th>
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<td>1.1.3 Languages</td>
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<td>3.1 Select one of the following options</td>
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<td>3.1.2 Technical Elective Course</td>
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<td>3.2 Field-Experience Courses</td>
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<tr>
<td>3.2.1 Select one of the following tracks</td>
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<tr>
<td>3.2.2 Senior Project Track</td>
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<tr>
<td>CSS300, CSS403</td>
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<tr>
<td>3.2.3 Foreign Exchange Track</td>
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<tr>
<td>CSS300, CSS495, CSS496</td>
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<tr>
<td>3.2.4 Extended Training Track</td>
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<tr>
<td>CSS497</td>
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<tr>
<td><strong>Total Credit Requirement</strong></td>
<td>150</td>
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</table>

### Details of the Curriculum

#### 1. General Basic Courses

- **Part I**
  - **Humansites (1 course)**: TU110
  - **Social Sciences (2 courses)**: TU120, TU100
  - **Languages (3 courses)**: EL171, EL172, TU140
  - **Science and Mathematics (2 courses)**: ITS100, TU130

- **Part II**
  - **EC210, GTS101, GTS133, GTS202, GTS231**

#### 2. Major Courses

- **Core Courses**
  - **GTS116, GTS117, GTS210, SCS138, SCS139, CSS226, CSS331, CSS400, ECS203, ECS204, GTS203, IES302, IES302, MTS252**

- **Specialized Courses**
  - **Technologies for Applications**
    - **ITS229, ITS322, ITS351**
  - **Technologies and Software Processes**
    - **ITS102, ITS103, ITS221, ITS227**
  - **System Infrastructure**
    - **CSS221, CSS225, CSS321, CSS334**
  - **Hardware and Computer Architecture**
    - **CSS224, CSS332, CSS333, ECS370**

- **Elective Courses**
  - **CSS431, CSS432, CSS433, CSS434, CSS441, CSS492, CSS493, CSS494, CSS495, CSS496, CSS497, CSS499, IES302, IES303, IES487, IES488, IES489**
  - **Selective Technical Elective Course**

- **Field-Experience Courses**
  - **CSS300, CSS403**
  - **CSS300, CSS495, CSS496**
  - **CSS497**

#### 3. Free Elective Courses

- **Students may choose any free elective courses (not less than 6 credits in total) including general basic courses, except:**
  - **General basic courses in Science and Mathematics**
  - **All general basic TU courses in both Part 1 and Part 2**

**Total Credit Requirement**: 150 Credits
### CPE Curriculum : 150 Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits (lecture-practice-self study hours)</th>
<th>Course</th>
<th>Credits (lecture-practice-self study hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL171 English Course II</td>
<td>3(3-0-6)</td>
<td>ITS329 System Analysis and Design</td>
<td>3(3-0-6)</td>
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<tr>
<td>GTS110 Skills Development for Technical Studies</td>
<td>3(3-0-6)</td>
<td>ITS352 Networking Laboratory</td>
<td>1(0-3-0)</td>
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<tr>
<td>GTS116 Mathematics for Technologists I</td>
<td>3(3-0-6)</td>
<td><strong>Option I: Intelligent Systems</strong></td>
<td></td>
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<tr>
<td>GTS113 Environmental Studies</td>
<td>3(2-2-5)</td>
<td>CSS431 Machine Learning and Pattern Recognition</td>
<td>3(3-0-6)</td>
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<tr>
<td>ITS100 Introduction to Computers and Programming</td>
<td>3(2-3-4)</td>
<td>CSS432 Information Retrieval</td>
<td>3(3-0-6)</td>
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<tr>
<td>MTS252 Materials Science</td>
<td>3(3-0-6)</td>
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<tr>
<td>SCS138 Applied Physics I</td>
<td>3(3-0-6)</td>
<td><strong>Option II: Pervasive Technology</strong></td>
<td></td>
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<tr>
<td><strong>Option I: Intelligent Systems</strong></td>
<td></td>
<td>CSS441 Security and Cryptography</td>
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<tr>
<td><strong>Option II: Pervasive Technology</strong></td>
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<td>CSS443 Real-time and Embedded Systems</td>
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<td><strong>Sub-Total</strong></td>
<td>21(19-7-37)</td>
<td><strong>Option III: General Computer Engineering</strong></td>
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<tr>
<td><strong>Option III: General Computer Engineering</strong></td>
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<td>CSSxxx Compulsory Elective</td>
<td>3(x-x-x)</td>
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<td><strong>Sub-Total</strong></td>
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<td><strong>Summer</strong></td>
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<tr>
<td>Select either Senior Project Track, Foreign Exchange Track, or Extended Training Track.</td>
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<td><strong>1) Senior Project Track and Foreign Exchange Track</strong></td>
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</tr>
<tr>
<td><strong>2) Extended Training Track</strong></td>
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<td><strong>CSS400 Computer Engineering Training</strong></td>
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<td><strong>CSS495 Special Studies in Computer Engineering I</strong></td>
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<td><strong>Sub-Total</strong></td>
<td>12(x-x-x)</td>
<td><strong>CSS496 Special Studies in Computer Engineering II</strong></td>
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<tr>
<td><strong>Sub-Total</strong></td>
<td>12(x-x-x)</td>
<td><strong>Option III: General Computer Engineering</strong></td>
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<td><strong>CSS499 Extended Computer Engineering Training</strong></td>
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</table>
Electronics and Communication Engineering (EC)

Curriculum Outline

Electronics and Communication Engineering is among the most challenging fields of study in electrical engineering. The areas of study in electronics and communication engineering are quite diverse. The curriculum is therefore developed to provide fundamental knowledge in several major study areas so that students will be well prepared for work in the highly competitive and fast-moving electronics and communication engineering professions.

The compulsory courses are designed to provide students a broad understanding of the principles, illustrated by current applications, in electronics and communication engineering. The compulsory courses include four laboratory courses, providing hands-on learning of electric circuits, electronics, feedback control, and signal processing and communication.

By the end of the first semester of their fourth year, students will complete the study of most compulsory courses, with a strong emphasis in various communication systems. Through technical elective courses, students can further extend their knowledge in the communications area and/or explore topics in other areas such as electronics or mechatronics.

In the last semester, students can choose from three main options: academic exchange programs abroad, extended training programs with leading local companies, or senior projects with SIIT advisors. The last two options provide a project-based learning opportunity, in which students must integrate and apply the knowledge they have acquired.

Structure and Components

1. General Basic Courses 30 Credits
   - Part I 21 Credits
     - Humanities (1 course) 2 Credits
       - TU110
     - Social Sciences (2 courses) 5 Credits
       - TU100  TU120
     - Languages (3 courses) 9 Credits
       - EL171  EL172  TU140
     - Science and Mathematics (2 courses) 5 Credits
       - ITS100  TU130
   - Part II 9 Credits
     - GTS132  GTS133  GTS202

2. Major Courses 114 Credits
   2.1 Basic Courses 38 Credits
     - Basic Mathematics and Science Courses 21 Credits
       - MAS116  MAS117  MAS210  SCS126
       - SCS138  SCS139  SCS176  SCS183
       - SCS184
     - Basic Engineering Courses 17 Credits
       - GTS302  IES303  MES211  MES300
       - MES351  MES371

   2.2 Specialized Courses 76 Credits
     2.2.1 Compulsory Engineering Courses 63 Credits
       - Basic Electrical Engineering
         - ECS210  ECS213  ECS216  ECS217
         - ECS218  ECS231  ECS233  ECS261
         - ECS281  ECS315  ECS320  ECS322
         - ECS370  ECS371  ECS380  ECS381
         - ECS382
       - Communications Theory
         - ECS332
       - Signal Processing
         - ECS450  ECS472
       - Communication Devices and Transmission Lines
         - ECS442  ECS456  ECS462
       - Communication systems and Networks
         - ECS451  ECS452

     2.2.2 Elective Engineering Courses 13 Credits
       - Special Study 7 Credits
         - ((ECS300, ECS396 and ECS398) or (ECS396 and ECS399) or (ECS300, ECS396, ECS496 and ECS497))
       - Technical Elective courses 6 Credits

3. Free Elective Courses 6 Credits

Students may choose any free elective courses (not less than 6 credits in total) including general basic courses, except:
1. General basic courses in Science and Mathematics
2. All general basic TU courses in both part 1 and part 2

Total Credit Requirement 150 Credits
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits (lecture-practice-self study hours)</th>
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</thead>
<tbody>
<tr>
<td><strong>Semester I</strong></td>
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<tr>
<td>EL171 English Course II</td>
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<td>GTS132 Introduction to Biological Science</td>
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<td>MAS116 Mathematics I</td>
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<tr>
<td>SCS126 Chemistry for Engineers</td>
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<tr>
<td>SCS138 Applied Physics I</td>
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<tr>
<td>SCS176 Chemistry Laboratory</td>
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<tr>
<td>SCS183 Physics Laboratory I</td>
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<td>TU100 Civic Education</td>
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<td>TU130 Integrated Sciences and Technology</td>
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<td>EL172 English Course III</td>
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<td>ITS100 Introduction to Computers and Programming</td>
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<td>MAS117 Mathematics II</td>
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<td>SCS184 Physics Laboratory II</td>
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<td>ECS216 Circuit Analysis</td>
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<td>ECS217 Computer Tools in EE</td>
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<td>GTS202 English Language Structures</td>
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<td>MAS210 Mathematics III</td>
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<tr>
<td>MES300 Engineering Drawing</td>
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<tr>
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<td>ECS210 Basic Electrical Engineering Laboratory</td>
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<tr>
<td>ECS218 Data Structures, Algorithms, and Object Oriented Programming</td>
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<td>ECS231 Electronic Circuits I</td>
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<td>ECS233 Electromagnetics</td>
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<tr>
<td>ECS261 Electrical Measurement and Instrumentation</td>
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<td>ECS281 Signals and Systems</td>
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<td>ECS315 Probability and Random Processes</td>
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<td>ECS322 Electronic Circuits II</td>
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<td>ECS332 Principles of Communications</td>
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<td>ECS370 Digital Circuit Laboratory</td>
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<td>ECS381 Feedback Control Systems</td>
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<td>ECS451 Data Communications and Networks</td>
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<tr>
<td>MES211 Thermo fluids</td>
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<tr>
<td>ECS320 Electronic Circuits Laboratory</td>
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<td>ECS380 Feedback Control Laboratory</td>
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<tr>
<td>ECS382 Microprocessors</td>
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<td>ECS452 Digital Communication Systems</td>
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<td>ECS462 Antennas</td>
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<td>ECS472 Digital Signal Processing</td>
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<tr>
<td>ECSxxx Technical Elective</td>
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<td>ECS396 Project Development</td>
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<td>ECS442 Microwave Principles</td>
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<tr>
<td>ECS450 Signal Processing and Communication Laboratory</td>
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<td>ECS456 Optical Communications</td>
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<td>ECSxxx Technical Elective</td>
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<tr>
<td>IES303 Engineering Management and Cost Analysis</td>
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<td>MES371 Material Science for Engineers</td>
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<td><strong>Semester II</strong></td>
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<tr>
<td>ECS398 Electrical and Communication Engineering Engineering Project</td>
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<tr>
<td>XXXxxx Free Elective</td>
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<td><strong>Semester II</strong></td>
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<td>ECS496 Special Study in EC I</td>
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Engineering Management (EM)

Curriculum Outline

The Engineering Management Program is designed for qualified individuals who plan to assume a management role in a technology-based, project-oriented environment within a manufacturing, service, or government organization. It offers an interdisciplinary course of study that combines the unique capabilities of industrial engineering, management, and information technology. As a result, the program provides a focus on technological leadership through the integration of people and technology.

Students are prepared for leadership roles in technologically oriented businesses through courses that present both the theoretical, and the practical aspects of managing complex engineering projects. The curriculum enables students to understand and manage the complex interactions among people, technology, finance, and the socio-political environment in which organizations operate. Upon completion of the program, graduates will be equipped with broad-based knowledge, and quantitative and qualitative analytical skill to succeed as managers, from project conceptualization through its implementation.

In order to gain practical experiences, fourth-year students are allowed to choose among three tracks of special studies. For more details on the academic options and special studies, please contact the Program Coordinator.

Structure and Components

1. General Basic Courses 36 Credits
   1.1 Part I 21 Credits
      1.1.1 Humanities (1 course) 2 Credits
      TU110
      1.1.2 Social Sciences (2 courses) 5 Credits
      TU100 TU120
      1.1.3 Languages (3 courses) 9 Credits
      EL171 EL172 TU140
      1.1.4 Science and Mathematics (2 courses) 5 Credits
      ITS100 TU130
   1.2 Part II 15 Credits
      EC210 GTS101 GTS133
      GTS202 GTS231

2. Core Courses 108 Credits
   2.1 Compulsory Courses 102 Credits
      2.1.1 Science and Mathematics (6 courses) 18 Credits
      GTS111 GTS112 GTS121 GTS122
      GTS211 GTS212
      2.1.2 Fundamentals of Engineering and Technology (6 courses) 17 Credits
      GTS303 MES211 MTS234 MTS251
      MTS252 MTS254
      2.1.3 Information Technology (4 courses) 12 Credits
      ITS101 MTS381 MTS382 MTS482
      2.1.4 General Management (6 courses) 18 Credits
      MTS211 MTS212 MTS311 MTS312
      MTS411 MTS412
      2.1.5 Engineering Management (13 courses) 37 Credits
      MTS231 MTS232 MTS233 MTS311
      MTS332 MTS333 MTS334 MTS351
      MTS394 MTS403 MTS431 MTS451
      MTS481
   2.2 Special Study 6 Credits
      1) Senior Project Track (2 courses) 6 Credits
      MTS309 MTS404
      2) Foreign Exchange Track (3 courses) 6 Credits
      MTS309 MTS493 MTS494
      3) Extended Management Training Track (1 course) 6 Credits
      MTS304

3. Free Elective Courses 6 Credits
   Select any courses offered by the university, except basic courses.

Total Credit Requirement 150 Credits
## EM Curriculum : 150 Credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits (lecture-practice-self study hours)</th>
<th>Course</th>
<th>Credits (lecture-practice-self study hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester I</td>
<td></td>
<td>Semester II</td>
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</tr>
<tr>
<td>EL171 English Course II</td>
<td>3(3-0-6)</td>
<td>MTS312 Principles of Marketing</td>
<td>3(3-0-6)</td>
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<td>GTS101 Skills Development for Technical Studies</td>
<td>3(3-0-6)</td>
<td>MTS331 Economic Decision Analysis</td>
<td>3(3-0-6)</td>
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<tr>
<td>GTS111 Mathematical Analysis for Management Science</td>
<td>3(3-0-6)</td>
<td>MTS332 Quality Management</td>
<td>3(3-0-6)</td>
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<tr>
<td>GTS121 General Science I</td>
<td>3(3-0-6)</td>
<td>MTS333 Production and Inventory Management</td>
<td>3(3-0-6)</td>
</tr>
<tr>
<td>GTS133 Environmental Studies</td>
<td>3(2-2-5)</td>
<td>MTS394 Introduction to Research Methodology in Management Technology</td>
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</tr>
<tr>
<td>ITS100 Introduction to Computers and Programming</td>
<td>3(2-3-4)</td>
<td>MTS411 Management Accounting</td>
<td>3(3-0-6)</td>
</tr>
<tr>
<td>MTS252 Materials Science</td>
<td>3(3-0-6)</td>
<td>MTS451 Project Management</td>
<td>3(3-0-6)</td>
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<tr>
<td><strong>Sub-Total</strong></td>
<td>21(19-5-39)</td>
<td><strong>Sub-Total</strong></td>
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<tr>
<td>Semester II</td>
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<td>Semester III</td>
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<tr>
<td>EC210 Introductory Economics</td>
<td>3(3-0-6)</td>
<td>MTS233 Introduction to Supply Chain Management</td>
<td>3(3-0-6)</td>
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<tr>
<td>EL172 English Course III</td>
<td>3(3-0-6)</td>
<td>MTS403 Management Technology Seminar</td>
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<td>GTS112 Linear Algebra</td>
<td>3(3-0-6)</td>
<td>MTS412 Business Finance</td>
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<td>GTS122 General Science II</td>
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<td>MTS431 Facility Location and Layout Planning</td>
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<td>ITS101 Programming and Algorithms</td>
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<td>MTS481 Business Process Simulation</td>
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<td>TU100 Civic Education</td>
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Modern industrial engineering is a combination of basic engineering knowledge and quantitative analysis techniques to support managerial decision making. It is concerned with the efficiency in which work is performed by machines and people. Industrial engineers (IEs) use the information and techniques from physical, biological, mathematical, behavioral, and engineering sciences to plan, control, design, and manage complex manufacturing and business systems. Specifically, they utilize knowledge and principles in manufacturing systems and processes, operations research, ergonomics, and management in specifying, predicting, and evaluating the performance measures of such systems.

The study of industrial engineering places emphasis upon developing the student’s abilities to analyze and design systems that integrate technical, economic, and social behavioral factors in manufacturing, service, social, and government organizations. This study leads to a variety of professional opportunities in the manufacturing industry, health care services, research and development, financial centers, public service enterprises, and business corporations.

In order to accomplish these objectives, the Industrial Engineering Program offers a curriculum that is specifically designed, not only to distinguish itself from the curricula offered at other Thai universities, but is also at a standard comparable to those offered at renowned international universities. The IE curriculum offers courses that cover four major industrial engineering areas, namely, ergonomics/safety, operations research/quantitative analysis, management, and manufacturing systems. The offering of courses is carefully arranged so that those providing basic and fundamental courses are taught in the early years to build adequate technical background. Then, their applications are discussed in depth in courses presented in the later years. IE students can choose their preferred technical background. Then, their applications are discussed in depth in courses presented in the later years. IE students can choose their preferred area of concentration, either “industrial engineering” or “manufacturing engineering,” in their third year. The industrial engineering option is suitable for students who like to pursue a career as an engineering consultant or systems analyst for a business corporation or to continue graduate study either locally or abroad after graduation. For those who like working with industrial equipment and machines and prefer the factory environment to the business office, the manufacturing engineering option will provide them with practical knowledge and experience to help them quickly adapt themselves to their work environment.

In addition, IE students can choose among three optional tracks (Senior Project Track, Foreign Exchange Track, and Extended Training Track).

- **Senior Project Track** is for students who would like to conduct their projects under the supervision of IE faculty members.
- **Foreign Exchange Track** is designed for students who wish to participate in a student exchange program with foreign partner universities.
- **Extended Training Track** is designed for students who would like to participate in a longer training period (for the entire semester) under the supervision of IE faculty members.

### Structure and Components

**1. General Basic Courses**

<table>
<thead>
<tr>
<th>Course Type</th>
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<tbody>
<tr>
<td>1.1 Part I</td>
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**2. Major Courses**

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<td>2.2 Specialized Courses</td>
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<tr>
<td>2.2.1 Compulsory Engineering Courses</td>
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<tr>
<td>2.2.1.1 Materials and Manufacturing Process</td>
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<td>2.2.1.2 Work Systems and Safety</td>
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<td>2.2.1.4 Economic and Finance</td>
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**3. Free Elective Courses**

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**Total Credit Requirement**

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**IE Curriculum : 150 Credits**

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<tr>
<th>Course</th>
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<tr>
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<tr>
<td><strong>Semester II</strong></td>
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<td><strong>Second Year</strong></td>
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<tr>
<td>ECS203 Basic Electrical Engineering</td>
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<td>IES201 Industrial Engineering Mathematics</td>
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<td>IES301 Manufacturing Tools and Operations</td>
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<td>MAS210 Mathematics III</td>
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<td>MES231 Engineering Mechanics</td>
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<td>MES341 Fluids Dynamics</td>
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<td>GTS302 Technical Writing</td>
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<td>IES321 Operations Research I</td>
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<td>IES361 Manufacturing Process Design</td>
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<td>IES353 Pollution Control and Waste Treatment</td>
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<td>IES392 Systems Simulation</td>
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<tr>
<td>ECS308 Basic Electromechanical Energy Conversion</td>
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<tr>
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<td><strong>Semester I</strong></td>
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<tr>
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<td>IES343 Safety Engineering</td>
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<td>IES402 Special Study in IE I</td>
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<td>IES403 Special Study in IE II</td>
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# Information Technology (IT)

## Curriculum Outline

The Information Technology curriculum is designed to prepare students for rapidly changing technology. Students will be exposed to a wide range of subjects covering all aspects of information technology and its applications. Emphasis is put on the convergence of computer and telecommunications technologies, and their applications to management science.

The compulsory core courses are designed to help students to:
1. understand fundamental concepts of electronics and information technology that lead to high performance digital processing,
2. know the essence of techniques that are needed for the development of information technology applications for telecommunications, industry, and business,
3. gain confidence to perform the management of information technology in the current business world.

After gaining enough background through the compulsory core courses, the students are allowed to tailor their courses according to their personal interest. Twelve credits of compulsory elective courses which are required for graduation, can be selected from one of these:
1. Major in Information and Communication Technology
2. Major in Information Technology Management
3. Major in Information Technology

## Structure and Components

### 1. General Basic Courses

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Credits</th>
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<td>1.1 Humanities</td>
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<tr>
<td>1.2 Social Sciences</td>
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</tr>
<tr>
<td>1.3 Science and Mathematics</td>
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</tr>
<tr>
<td>1.4 Languages</td>
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### 2. Core Courses

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<th>Credits</th>
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<tbody>
<tr>
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<tr>
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<tr>
<td>2.1 Science and Mathematics</td>
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<tr>
<td>2.2 Non-IT Courses</td>
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<tr>
<td>2.3 IT Courses</td>
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### 3. Free Elective Courses

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## Details of the Curriculum

### 1. General Basic Courses

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<tr>
<th>Course Type</th>
<th>Credits</th>
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<tbody>
<tr>
<td>1.1 Part I</td>
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<td>1.1.1 Humanities</td>
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<td>1.1.4 Languages</td>
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### 2. Core Courses

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<tr>
<td>2.1.1 Science and Mathematics</td>
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<tr>
<td>2.1.2 Non-IT Courses</td>
<td>21</td>
</tr>
<tr>
<td>2.1.3 IT Courses</td>
<td>48</td>
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</tbody>
</table>

### 3. Free Elective Courses

Students may choose any free elective courses (not less than 6 credits in total) including general basic courses, except:
1. General basic courses in Science and Mathematics
2. All general basic TU courses in both Part 1 and Part 2

Total Credit Requirement: 150 Credits
## IT Curriculum : 150 Credits

### First Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits (lecture-practice-self study hours)</th>
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<tbody>
<tr>
<td>Semester I</td>
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<tr>
<td>EL171 English Course II</td>
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<tr>
<td>GTS101 Skills Development for Technical Studies</td>
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<tr>
<td>GTS116 Mathematics for Technologist I</td>
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<tr>
<td>GTS121 General Science I</td>
<td>3(3-0-6)</td>
</tr>
<tr>
<td>GTS133 Environmental Studies</td>
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<td>MTS252 Materials Science</td>
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### Second Year

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### Third Year

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<td>ITS323 Introduction to Data Communications</td>
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### Fourth Year

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<td>ITS423 Data Warehouses and Data Mining</td>
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### Summer

- Select either Senior Project Track, Foreign Exchange Track, or Extended Training Track.
- **1. Senior Project Track and Foreign Exchange Track**
  - ITS300 Information Technology Training | 0(0-0-0) |
  - **Sub-Total** | **0(0-0-0)**
  - **2. Extended Training Track**
    - XXXxxx Free Elective | 3(x-x-x) |
    - XXXxxx Free Elective | 3(x-x-x) |
    - **Sub-Total** | **6(x-x-x)**
- **3. Extended Training Track**
  - ITSxxx Compulsory Elective | 3(x-x-x) |
  - ITSxxx Compulsory Elective | 3(x-x-x) |
  - **Sub-Total** | **22(x-x-x)**

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<td>ITS441 Accounting Information Systems</td>
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<td>XXXxxx Free Elective</td>
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- **2) Foreign Exchange Track**
  - ITS495 Special Studies in Information Technology | 13(3-0-6) | 3(x-x-x) |
  - ITS496 Special Studies in Information Technology | 13(3-0-6) | 3(x-x-x) |
  - XXXxxx Free Elective                     | 3(x-x-x) |
  - XXXxxx Free Elective                     | 3(x-x-x) |
  - **Sub-Total**                             | **12(x-x-x)**                              |

### Summer

- **1. Senior Project Track and Foreign Exchange Track**
  - ITS300 Information Technology Training | 0(0-0-0) |
  - **Sub-Total** | **0(0-0-0)**
  - **2. Extended Training Track**
    - XXXxxx Free Elective | 3(x-x-x) |
    - XXXxxx Free Elective | 3(x-x-x) |
    - **Sub-Total** | **6(x-x-x)**
- **3. Extended Training Track**
  - ITSxxx Compulsory Elective | 3(x-x-x) |
  - ITSxxx Compulsory Elective | 3(x-x-x) |
  - **Sub-Total** | **22(x-x-x)**

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<tr>
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<td>Semester I</td>
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<td>GTS302 Technical Writing</td>
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<td>ITS327 Computer Network Architectures and Protocols</td>
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<td>ITS329 System Analysis and Design</td>
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<td>ITS102 Object-oriented Programming</td>
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<td>ITS103 Object-oriented Programming Laboratory</td>
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<td>TU110 Civic Education</td>
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</table>
The Management Technology (MT) Program covers general basic courses and three common foundations required for management technology, namely fundamental of technology, information technology, and general management. After completing the second year of the study, students will be allowed to choose to be specialized in one of the academic options offered by the MT Program. (The list of academic options to be offered to students is left to the discretion of SIIT.)

Examples of academic options are as follows:

Option 1: Management Information Systems (MIS)/Services Science, Management and Engineering (SSME)

Option 2: Supply Chain Management (SCM)

After completing their third year of study, students are allowed to choose a study track based on their capability. These study tracks include: (1) Senior Project Track, (2) Foreign Exchange Track, and (3) Extended Management Training Track. For more details on the academic options and study tracks, consult the Program Coordinator.

### Structure and Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>1. General Basic Courses</strong></td>
<td>36 Credits</td>
</tr>
<tr>
<td>1.1 Part I</td>
<td>21 Credits</td>
</tr>
<tr>
<td>1.1.1 Humanities</td>
<td>2 Credits</td>
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<tr>
<td>1.1.2 Social Sciences</td>
<td>5 Credits</td>
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<tr>
<td>1.1.3 Languages</td>
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<tr>
<td>1.1.4 Science and Mathematics</td>
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<td>1.2 Part II</td>
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<td><strong>2. Core Courses</strong></td>
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<tr>
<td>2.1 Compulsory Courses</td>
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<tr>
<td>2.1.1 Science and Mathematics (6 courses)</td>
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<tr>
<td>2.1.2 Fundamental of Technology (6 courses)</td>
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<tr>
<td>2.1.4 General Management (8 courses)</td>
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<tr>
<td>2.2 Compulsory Elective Courses</td>
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<tr>
<td>2.2.1 Special Study</td>
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<td>2) Foreign Exchange Track (3 courses)</td>
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<td>3) Extended Management Training Track (1 course)</td>
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<td><strong>3. Free Elective Courses</strong></td>
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**Total Credit Requirement:** 150 Credits

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### Details of the Curriculum

1. **General Basic Courses**
   - 1.1 Part I
     - 1.1.1 Humanities (1 course) 2 Credits
     - 1.1.2 Social Sciences (2 courses) 5 Credits
     - 1.1.3 Languages (3 courses) 9 Credits
     - 1.1.4 Science and Mathematics (2 courses) 5 Credits
     - 1.2 Part II (5 courses)
       - EC210 GTS101 GTS133
       - GTS202 GTS231

2. **Core Courses**
   - 2.1 Compulsory Courses
     - 2.1.1 Science and Mathematics (6 courses) 18 Credits
     - 2.1.2 Fundamental of Technology (6 courses) 17 Credits
     - 2.1.3 Information Technology (5 courses) 15 Credits
     - 2.1.4 General Management (8 courses) 24 Credits
   - 2.2 Compulsory Elective Courses
     - 2.2.1 Special Study 6 Credits
     - 2.2.2 Option Courses 28 Credits
     - 1) Senior Project Track (2 courses)
       - MTS301 MTS404
     - 2) Foreign Exchange Track (3 courses)
       - MTS301 MTS491 MTS492
     - 3) Extended Management Training Track (1 course)
       - MTS302
   - 3. Free Elective Courses
     - Select any courses offered by the university, except basic courses.

**Total Credit Requirement:** 150 Credits
MT Curriculum : 150 Credits

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<td>Select either Senior Project Track, Foreign Exchange Track, or Extended Management Training Track.</td>
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<td>MTS383 E-Business</td>
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<td>MTS483 Information Systems Implementation</td>
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<td>MTS484 Intelligent Systems for Business</td>
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<td>MTS335 Enterprise Planning and Control Systems</td>
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<td>MTS337 Transportation and Logistics Management</td>
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Mechanical engineering is concerned with the mechanisms of energy conversion and their utilization in all fields of industry, as well as in improving the quality of life for everyone. The mechanical engineering discipline has always been central to engineering. Mechanical engineers are involved in a wide range of technological activities which include: production, building-facilities, chemical processing, power generation, material science, mining and mineral extraction, transportation, aerospace engineering, and so on. For these reasons, all industries require the services of mechanical engineers.

The aim of the Mechanical Engineering Program at SIIT is to provide an effective education to prospective engineers, giving them the ability to plan, administer, and manage the latest technologies. Two main areas of study are emphasized in this program; these are: (1) general mechanical engineering, and (2) energy management.

Engineering science is taught mainly in the first and second years. Specialized mechanical engineering courses are offered to the third and fourth year students. Additionally, fundamentals of electrical engineering and industrial practice are included in the undergraduate program in mechanical engineering.

In order to serve industry competently, students have to be exposed to real equipment and processes. Two laboratory courses are required. An extended laboratory course is offered as an elective subject to senior projects, and guided by members of the teaching staff. As engineering students should obtain some experience of industry in order to learn the ways of industrial life and work, an industrial training course is offered for mechanical engineering students.

In addition, ME students can choose among three optional tracks (Senior Project Track, Foreign Exchange Track, and Extended Training Track).

- Senior Project Track is designed for ME students who wish to conduct a project under the supervision of ME faculty members.
- Foreign Exchange Track is designed for students who wish to participate in a student exchange program with foreign partner universities.
- Extended Training Track is designed for students who wish to conduct a co-operative training program in industry.

### Details of the Curriculum

#### 1. General Basic Courses

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>Part I</td>
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<td>TU110</td>
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<td>TU100</td>
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#### 2. Major Courses

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<td>GTS132</td>
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#### 3. Free Elective Courses

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<thead>
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# ME Curriculum: 149 Credits

## First Year

### Semester I

<table>
<thead>
<tr>
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<tr>
<td>EL171 English Course II</td>
<td>3(3-0-6)</td>
<td>ITS100 Introduction to Computers and Programming</td>
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<td>MAS116 Mathematics I</td>
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<td>SCS126 Chemistry for Engineers</td>
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<tr>
<td>SC138 Applied Physics I</td>
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<td>SCS176 Chemistry Laboratory</td>
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<td>SCS183 Physics Laboratory I</td>
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<td>TU100 Civic Education</td>
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### Semester II

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<tr>
<td>EL172 English Course III</td>
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<td>GTS132 Introduction to Biological Science</td>
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<td>MAS117 Mathematics II</td>
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<tr>
<td>SCS139 Applied Physics II</td>
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<td>SCS184 Physics Laboratory II</td>
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<td>TU140 Thai Studies</td>
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### Semester I

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<tbody>
<tr>
<td>ECS203 Basic Electrical Engineering</td>
<td>3(3-0-6)</td>
<td>IES301 Manufacturing Tools and Operations</td>
<td>3(2-3-4)</td>
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<tr>
<td>MAS210 Mathematics III</td>
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<td>MAS215 Differential Equations</td>
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<td>MES300 Engineering Drawing</td>
<td>3(2-3-4)</td>
<td>MES311 Thermodynamics</td>
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<td>MES350 Engineering Statics</td>
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### Semester II

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<tr>
<td>ECS204 Basic Electrical Engineering Laboratory</td>
<td>1(0-3-0)</td>
<td>GTS202 English Language Structures</td>
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<tr>
<td>ECS306 Basic Electrical Machines and Power System</td>
<td>3(3-0-6)</td>
<td>MES302 Introduction to Computer Aided Design</td>
<td>2(1-3-2)</td>
</tr>
<tr>
<td>MES331 Solid Mechanics I</td>
<td>3(3-0-6)</td>
<td>MES341 Fluid Dynamics</td>
<td>3(3-0-6)</td>
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<tr>
<td>MES351 Engineering Dynamics</td>
<td>3(3-0-6)</td>
<td>TU110 Integrated Humanities</td>
<td>2(2-0-4)</td>
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## Second Year

### Semester I

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<tr>
<td>ECS204 Basic Electrical Engineering Laboratory</td>
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<td>GTS202 English Language Structures</td>
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<tr>
<td>ECS306 Basic Electrical Machines and Power System</td>
<td>3(3-0-6)</td>
<td>MES302 Introduction to Computer Aided Design</td>
<td>2(1-3-2)</td>
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<tr>
<td>MES331 Solid Mechanics I</td>
<td>3(3-0-6)</td>
<td>MES341 Fluid Dynamics</td>
<td>3(3-0-6)</td>
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<tr>
<td>MES351 Engineering Dynamics</td>
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<td>ECS307 Basic Electromechanical Energy Conversion 1(0-3-0) Laboratory</td>
<td>1(0-3-0)</td>
<td>IES371 Engineering Management</td>
<td>3(3-0-6)</td>
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<tr>
<td>GTS302 Technical Writing</td>
<td>2(2-1-3)</td>
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<tr>
<td>MES342 Refrigeration and Air Conditioning</td>
<td>3(3-0-6)</td>
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<td>MES352 Mechanics of Machinery</td>
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<td>MES371 Material Science for Engineers</td>
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<tr>
<td>MES391 Mechanical Engineering Laboratory I</td>
<td>2(1-3-2)</td>
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<tr>
<td><strong>Option I: General Mechanical Engineering</strong></td>
<td><strong>3(3-0-6)</strong></td>
<td><strong>Sub-Total</strong></td>
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<tr>
<td>IES341 Engineering Economy</td>
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<td>MES381 Measurement and Instrumentation</td>
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## Third Year

### Semester I

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<tr>
<td>ECS307 Basic Electromechanical Energy Conversion 1(0-3-0) Laboratory</td>
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<tr>
<td>GTS302 Technical Writing</td>
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<tr>
<td>MES342 Refrigeration and Air Conditioning</td>
<td>3(3-0-6)</td>
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<td>MES352 Mechanics of Machinery</td>
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<tr>
<td>MES371 Material Science for Engineers</td>
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<tr>
<td>MES391 Mechanical Engineering Laboratory I</td>
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<td><strong>Option I: General Mechanical Engineering</strong></td>
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<tr>
<td>IES341 Engineering Economy</td>
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<td>MES381 Measurement and Instrumentation</td>
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## Fourth Year

### Semester I

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<td>MES403 Senior Project I</td>
<td>1(0-2-1)</td>
<td>IES422 Thermal System Design</td>
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<td>MES482 Turbomachinery</td>
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<td>MES481 Power Plant Engineering</td>
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<td>TU120 Integrated Social Sciences</td>
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<td><strong>Option I: General Mechanical Engineering</strong></td>
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<tr>
<td>IES371 Engineering Management</td>
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### Semester II

#### 1) Senior Project Track

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#### 2) Foreign Exchange Track

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<td>MES405 Special Study in Mechanical Engineering</td>
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<tr>
<td>MES406 Special Study in Mechanical Engineering II</td>
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#### 3) Extended Training Track

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<td>MES408 Extended Mechanical Engineering Training</td>
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Course Descriptions

Numerical Code

For the engineering and technology courses, the following numerical codes are used.

- The first digit indicates the level of difficulty.
- The second digit indicates the course groups.

For common courses, the above codes do not apply. The numbers after each course (e.g., 3(3-0-6)) represent the credits, lecture hours, laboratory/practice hours, and self study hours, respectively.

Prerequisite / Corequisite Requirements

It is the responsibility of the student to meet all prerequisite and corequisite requirements. Students may not be allowed to take a course if its prerequisites have not been satisfactorily passed. A corequisite course must be taken concurrently or must have been previously passed.

**CES201 Engineering Materials 3(3-0-6)**
Prerequisite: None

**CES202 Introduction to Building Facilities 3(3-0-6)**
Prerequisite: None

**CES215 Applied Mathematics in Civil Engineering 3(3-0-6)**
Prerequisite: Have earned credits of MAS 117 or consent of Head of School

**CES302 Engineering Hydrology 3(3-0-6)**
Prerequisite: None

**CES303 Civil Engineering Training 0(0-0-0)**
Prerequisite: Junior standing or consent of Head of School
Students are provided with on-the-job training at selected governmental organizations, state enterprises or private companies. The purposes of the course are to provide the students opportunities to experience civil engineering works other than what learned in the class. The training period must not be less than 240 hours. Student must submit a report at the end of the training period. Satisfactory (S) or unsatisfactory (U) grade will be given based on student’s performance, quality of the report, and supervisor's comments.

**CES305 Urban Hydrology 3(3-0-6)**
Prerequisite: None
CES311 Theory of Structures 3(3-0-6)
Prerequisite: Have earned credits of CES371 or consent of Head of School

CES312 Structural Analysis 3(3-0-6)
Prerequisite: Have earned credits of CES311 or consent of Head of School

CES315 Computational Methods in Civil Engineering 3(3-0-6)
Prerequisite: Have earned credits of MAS 215 or CES215 or consent of Head of School

CES321 Timber and Steel Design 4(3-3-6)
Corequisite: Taking CES311 in the same semester or consent of Head of School

CES322 Reinforced Concrete Design 4(3-3-6)
Prerequisite: Have earned credits of CES351 and taking CES311 in the same semester or consent of Head of School
Material properties of concrete and reinforcing bars. Fundamental behavior in thrust, flexure, shear, torsion, bond and interaction among these forces. Design of reinforced concrete structural components, i.e., beams, columns, slabs, stairs, footings, and retaining walls by working stress and strength design concepts. Reinforcement detailing. Tutorial design workshops. Practice in reinforced concrete design and detailing.

CES331 Soil Mechanics 3(3-0-6)
Prerequisite: Have earned credits of CES371 or consent of Head of School

CES332 Foundation Engineering 3(3-0-6)
Prerequisite: Have earned credit of CES331 or consent of Head of School

CES333 Soil Mechanics Laboratory 1(0-3-0)
Corequisite: Taking CES331 in the same semester or consent of Head of School

CES341 Transportation Engineering and Planning 3(3-0-6)
Prerequisite: None
Characteristics and equilibrium of transportation demand and supply. Planning, design and evaluation of transportation systems, transportation models; water transportation; pipeline transportation; road transportation; railway transportation; air transportation. Economic and financial assessment of transport projects.

CES343 Highway Engineering 3(3-0-6)
Prerequisite: Have earned credits of CES361 or consent of Head of School

CES344 Logistics System Engineering 3(3-0-6)
Prerequisite: None
CES351 Concrete Technology 3(2-3-4)
Prerequisite: None

CES352 Material Testing 1(0-3-0)
Prerequisite: Have earned credits of CES351 and taking CES351 in the same semester or consent of Head of School
Tests on properties of cement, properties of aggregates, properties of fresh cement paste, properties of fresh mortar, and properties of fresh concrete. Compression test, tensile test, torsion test, flexural and share tests on civil engineering materials.

CES353 Construction Engineering and Management 3(3-0-6)
Prerequisite: None

CES361 Surveying 3(2-3-4)
Prerequisite: None

CES362 Field Surveying Camp 1(0-80-0)
Prerequisite: Have earned credits of CES361 or consent of Head of School
Practice of surveying planning, reconnaissance survey, topographic survey, topographic mapping, long range leveling, surveying reports and documentation. Total field surveying practice period is 80 hours.

CES370 Mechanics of Materials 3(3-0-6)
(For non-civil engineering students)
Prerequisite: Have earned credits of SCS 138 or consent of Head of School

CES371 Mechanics of Solids I 3(3-0-6)
Prerequisite: Have earned credits of MES 350 or consent of Head of School

CES372 Mechanics of Solids II 3(3-0-6)
Prerequisite: Have earned credits of CES371 or consent of Head of School

CES381 Hydraulics 3(3-0-6)
Prerequisite: Have earned credits of SCS 138 or consent of Head of School

CES382 Hydraulics Laboratory 1(0-3-0)
Corequisite: Taking CES381 in the same semester or consent of Head of School

CES391 Special Topics in Civil Engineering I 3(3-0-6)
Prerequisite: None
New topics or areas of study not offered in other civil engineering courses. Topics may vary from semester to semester, but are different from CES392.

CES392 Special Topics in Civil Engineering II 3(3-0-6)
Prerequisite: None
New topics or areas of study not offered in other civil engineering courses. Topics may vary from semester to semester, but are different from CES391.

CES403 Seminar 1(0-3-0)
Prerequisite: Senior standing or consent of Head of School
A group seminar on one or more topics of interest in the field of civil engineering as approved by the seminar advisor.

CES405 Special Study in Civil Engineering I 3(3-0-6)
Prerequisite: Consent of Advisor and Head of School
An in-depth study of a topic in the field of civil engineering that is different from CES406.
CES406 Special Study in Civil Engineering II 3(3-0-6)
Prerequisite: Consent of Advisor and Head of School
An in-depth study of a topic in the field of civil engineering that is different from CES405.

CES407 Senior Project 6(0-18-0)
Prerequisite: Have earned credits of CES403
An in-depth study on a topic of interest in the field of civil engineering as approved by the project advisor.

CES408 Extended Civil Engineering Training 6(0-40-0)
Prerequisite: Senior standing
Extensive on-the-job training of at least 16 weeks at a selected organization that provides civil engineering services-an individual comprehensive research or practical project related to the training must be intensively conducted under close supervision of faculty members and supervisors assigned by the training organization. At the end of the training, the student must submit a report of the project and also gives a presentation.

CES414 Finite Element Methods in Engineering 3(3-0-6)
Prerequisite: None

CES423 Building Design 3(3-0-6)
Prerequisite: Have earned credits of CES322 or consent of Head of School

CES424 Bridge Engineering 3(3-0-6)
Prerequisite: Have earned credits of CES322 or consent of Head of School
Planning of bridge projects. Design, analysis and construction of various types of bridges including reinforced and prestressed concrete bridges, steel bridges, composite bridges, and cable-supported bridges.

CES426 Durability of Concrete Structures 3(3-0-6)
Prerequisite: Have earned credits of CES351 or consent of Head of School

CES444 Hydraulic Engineering 3(3-0-6)
Prerequisite: Have earned credits of CES381 or consent of Head of School

CES446 Port and Airport Engineering 3(3-0-6)
Prerequisite: Have earned credits of CES341 or CES450 or consent of Head of School
Planning and design of seaports and harbor. Planning of container terminal and cargo handling systems. Airport master planning. Air traffic control. Design of airport facilities.

CES450 Urban Engineering 3(3-0-6)
Prerequisite: None

CES494 Coastal Engineering 3(3-0-6)
Prerequisite: Have earned credits of CES381 or consent of Head of School

CHS211 Organic Chemistry 3(3-0-6)
Prerequisite: Have earned credits of SCS126 or consent of Head of School
A study of all aspects of fundamental organic chemistry, including nomenclature, chemical and physical properties, reactions and syntheses of the major classes of organic compounds.

CHS212 Physical Chemistry 3(3-0-6)
Prerequisite: Have earned credits of SCS126 or SCS139 or consent of Head of School
Basic kinetics and chemical reactions. Classical thermodynamics including the first, second, and third laws, spontaneity, chemical potential. Electrochemistry: relationship to thermodynamics and chemical equilibrium. Introduction to quantum mechanics: postulates of
quantum theory, orbital and spin angular momentum. Simple quantum systems such as particle in a box, harmonic oscillator, hydrogen atom. Molecular Symmetry. Statistical mechanics: partition function and ensembles.

CHS213 Applied Mathematics in Chemical Engineering 3(3-0-6)
Prerequisite: Have earned credits of MAS117 or consent of Head of School

CHS241 Material and Energy Balance 3(3-0-6)
Prerequisite: Have earned credits of SCS126 or consent of Head of School
Introduction to chemical engineering calculation: Stoichiometry and material balance calculation, recycling, bypassing and purging, use of chemical and phase equilibrium data, energy balance. Introduction of chemical engineering units.

CHS242 Thermodynamics I 3(3-0-6)
Prerequisite: None

CHS251 Fluid Dynamics 3(3-0-6)
Prerequisite: Have earned credits of CHS241 or consent of Head of School
Physical properties of fluids, fluids static and application, characteristics of fluid flow and momentum transfer including applications, design of unit operations for solid-fluid separations.

CHS301 Chemical Engineering Training 0(0-0-0)
Prerequisite: Junior standing or consent of Head of School
Students are provided with on-the-job training at selected modern industrial or service facilities. The purpose of the course is to allow the students opportunities to observe how chemical engineers function, to learn how to collaborate with co-workers, and to develop self-responsibility. The training period must not be less than 240 hours. Students must submit a report at the end of the training period. A Satisfactory (S) or unsatisfactory (U) grade will be given based on student’s performance, quality of the report, and supervisor’s comments.

CHS315 Environmental Chemical Engineering 3(3-0-6)
Prerequisite: Have earned credits of SCS126 or consent of Head of School
Impacts of environmental pollution, environmental quality standards, sources and characteristics of industrial wastes and treatment methods, hazardous wastes and disposal methods.

CHS316 Statistics for Chemical Engineering 3(3-0-6)
Prerequisite: Have earned credits of MAS117 or consent of Head of School
Course covers application of statistics to chemical engineering. Topics include probability, descriptive statistics, estimation, hypothesis testing, regression, and experimental design.

CHS317 Safety in Chemical Operations 3(3-0-6)
Prerequisite: Have earned credits of CHS241 or consent of Head of School
Principles of safety and loss prevention control, hazard identification and handling including risk assessment, principles of safety management, legislation and safety laws.

CHS327 Bio-Chemical Technology 3(3-0-6)
Prerequisite: Have earned credits of SCS126 or consent of Head of School
Molecular biology of cells and biotechnology including microbiology, microbial biotechnology, enzyme catalysis, technology and bio-chemical processes and applications.

CHS328 Pharmaceutical Industry and Technology 3(3-0-6)
Prerequisite: Have earned credits of SCS126 or consent of Head of School
Survey of basic principles of biochemistry and molecular biology with emphasis on broad understanding of chemical events in pharmaceutical products in the industry in terms of metabolism and structure-function relationships of biological molecules. Introduction to pharmaceutical production systems, including separation and purification processes.

CHS331 Chemical Reaction Kinetics and Reactor Design 3(3-0-6)
Prerequisite: Have earned credits of CHS241 or consent of Head of School
Application of thermodynamic and kinetic fundamentals to the analysis and design of chemical reactors, type of reactors: single reactor and multiple reactor systems, isothermal and non-isothermal operation: homogeneous reactors and introduction to heterogeneous reactors.

CHS343 Thermodynamics II 3(3-0-6)
Prerequisite: Have earned credits of CHS242 or consent of Head of School
Thermodynamics of multi-component systems and applications for phase equilibrium and chemical reaction equilibrium.
CHS352  Heat Transfer  3(3-0-6)
Prerequisite: Have earned credits of CHS251 or consent of Head of School
Basic principles and mechanisms for heat transfer, conceptual design for heat transfer equipment.

CHS353  Mass Transfer  3(3-0-6)
Prerequisite: Have earned credits CHS352 or consent of Head of School
Basic principles and mechanisms for mass transfer, conceptual design of mass transfer and simultaneous heat-mass transfer equipment.

CHS355  Chemical Engineering Process Design  3(3-0-6)
Prerequisite: Have earned credits of CHS241 or consent of Head of School
Problem-based course: Applications of chemical engineering fundamentals to the design of a multi-unit process. Emphasis on use of process simulators.

CHS362  Chemical Engineering Laboratory I  1(0-3-0)
Corequisite: Taking CHS352 in the same semester or consent of Head of School
Laboratory practice and experimental studies on topics covered in momentum and heat transfer.

CHS363  Chemical Engineering Laboratory II  1(0-3-0)
Corequisite: Taking CHS353 in the same semester or consent of Head of School
Laboratory practice and experimental studies on topics covered in simultaneous heat and mass transfer.

CHS364  Experimental Design and Methods for Chemical Engineering  3(3-0-6)
Prerequisite: Have earned credits of CHS316 or consent of Head of School
Scientific and technological concepts, ethics and good practice in research, searching the literature, regression, applications of statistical analyses, research design principles, factorial design, non regular design, design with complex aliasing, interpretation of analyses.

CHS371  Petroleum and Petrochemical Technology  3(3-0-6)
Prerequisite: Have earned credits of CHS211 or consent of Head of School
Introduction to petroleum and petrochemical products, natural gas and their uses. Study chemical and physical properties of some important petrochemical products. Applications of chemical engineering fundamentals to the design of processes in petrochemical industry including refinery and production plants.

CHS374  Polymer Science and Engineering  3(3-0-6)
Prerequisite: Have earned credits of CHS211 or consent of Head of School

CHS375  Analytical and Instrumental Chemistry  3(3-0-6)
Prerequisite: Have earned credits of SCS126 or consent of Head of School
Theory and practice of chemical quantitative analyses. Conventional and modern instrumental chemical and physical analyses include: statistical treatment of data, gravimetric and volumetric analyses, chemical equilibria, acid-base chemistry, electrochemistry, complex formation reaction, chromatographic analyses. Theory and applications of analytical instruments used in chemical engineering and technology.

CHS402  Seminar  1(0-2-1)
Prerequisite: Senior standing
Students are required to present reports on current developments of chemical engineering technology to their classmates and faculty members. The reports may lead to senior projects later on. The reports have to be submitted for grading.

CHS425  General Food Science  3(3-0-6)
Prerequisite: None
A study of the physical, chemical, and microbiological aspects of food, the function of and changes in components during preparation and processing of food.

CHS456  Transport Phenomena  3(3-0-6)
Prerequisite: None
Constitutive equations for momentum, energy and mass transfer. Development of microscopic and macroscopic momentum, energy and mass transfer equations for homogeneous and heterogeneous systems. Analogy and dimensionless analysis. Problems and applications in chemical engineering.

CHS457  Chemical Engineering Plant Design  3(3-0-6)
Prerequisite: Have earned credits of CHS355 or consent of Head of School
Problem-based course: Conceptual design of a chemical plant, general design considerations and selection, process design project of a chemical plant.

CHS461  Process Dynamics and Control  3(3-0-6)
Prerequisite: Have earned credits of CHS241 or consent of Head of School
Mathematical modeling of chemical engineering systems, solution techniques and dynamics of these systems, introduction to automatic control, feedback control
concept, stability analysis, frequency response and control system designs, introduction to measurement and control instrument characteristics.

**CHS463 Energy Technology and Management**

**Prerequisite:** Have earned credits of CHS241 or consent of Head of School

Electric power generation and distribution, heat exchangers, pinch analysis, fuels and combustion, heat engines and steam boiler, principles of energy management in industry, energy auditing, cleaner technology, and tools and methods to enhance the efficiency of industrial energy systems.

**CHS481 Special Topics in Chemical Engineering I**

**Prerequisite:** None

New topics or areas of study not offered in other chemical engineering courses. Topics may vary from semester to semester. Topic covered is different from CHS482 and CHS483.

**CHS482 Special Topics in Chemical Engineering II**

**Prerequisite:** None

New topics or areas of study not offered in other chemical engineering courses. Topics may vary from semester to semester. Topic covered is different from CHS481 and CHS483.

**CHS483 Special Topics in Chemical Engineering III**

**Prerequisite:** None

New topics or areas of study not offered in other chemical engineering courses. Topics may vary from semester to semester. Topic covered is different from CHS481 and CHS482.

**CHS484 Chemical Engineering Project**

**Prerequisite:** Senior standing

A student team will be given a problem, for which they must determine appropriate approaches and actions to obtain feasible solutions. This involves establishment of initial contacts, project proposal development, preliminary data collection, data analysis, verification of the results, and practical implementation. A presentation of the project and a submission of a comprehensive report are due at the end of the semester.

**CHS485 Special Studies in Chemical Engineering I**

**Prerequisite:** Consent of Advisor and Head of School

An in-depth study of a topic in the field of chemical engineering.

**CHS486 Special Studies in Chemical Engineering II**

**Prerequisite:** Consent of Advisor and Head of School

An in-depth study of a topic in the field of chemical engineering. Topic covered is different from CHS485.

**CHS487 Extended Chemical Engineering Training**

**Prerequisite:** Senior standing

Students are provided with on-the-job training at selected modern industrial or service facilities for an extended period of at least 16 weeks. The purpose of the course is to allow the students opportunities to observe how chemical engineers function, to learn how to collaborate with co-workers, and to develop self-responsibility. Students must submit a report at the end of the training period.

**CSS221 Computer Graphics and Applications**

**Prerequisite:** None

Representation and manipulation of graphic data. Representation and transformations of two-dimensional space, three-dimensional space. Illumination and shading modes. Visualizing and analyzing numerical data associated with scientific, business, and/or entertainment applications. Methods of creating, storing, manipulating, presenting and animating two and three dimensional graphical objects. Elements of image processing. Programming computer graphics with OpenGL or similar library.

**CSS222 Computer Architectures**

**Prerequisite:** Have earned credits of ECS371 or Corequisite: Taking ECS371 in the same semester or consent of Head of School


**CSS225 Operating System**

**Prerequisite:** Have earned credits of ITS100 or consent of Head of School


**CSS226 Scientific Computing**

**Prerequisite:** Have earned credits of GTS210 or consent of Head of School

An introduction to elementary numerical analysis and scientific computation. Topics include conditioning, stability, interpolation, quadrature, linear and nonlinear equation solving, least-squares fitting, eigenvalue and eigenvector computation, optimization, and ordinary differential equations.
CSS300  Computer Engineering Training
Prerequisite: Junior standing or consent of Head of School
Practical training in private sectors or governmental departments in the field of Computer Engineering not less than 240 hours during summer vacation of the third year. Students must submit a report to his/her supervisor who will decide for the final grade of either satisfactory (S) or unsatisfactory (U).

CSS321  Theory of Computation 3(3-0-6)
Prerequisite: None
Automata, computability, and complexity, emphasizing computability and computational complexity theory. Regular and context-free languages. Decidable and undecidable problems, reducibility, completeness theory, recursive function theory. Finite automata and regular languages. Push-down automata and context-free languages. Turing machines and decidable (recursive) languages.

CSS331  Fundamentals of Data Communications 3(3-0-6)
Prerequisite: None
An overview of techniques used in data communications and switched communication networks. Topics include: protocol architectures; data transmission and transmission media; signal encoding techniques; data link control protocols; multiplexing, multiple access and spread spectrum; switching networks.

CSS332  Microcontrollers and Applications 3(2-3-4)
Prerequisite: Have earned credits of ECS371 or consent of Head of School

CSS333  Parallel and Distributed Computing 3(3-0-6)
Prerequisite: Have earned credits of CSS225 or consent of Head of School
Architectures, algorithms, and languages for parallel and distributed processing. Pipeline computing; super computing; multi-processing control; dataflow computing. Distributed computer systems; distributed file systems; distributed shared memory.

CSS334  Computer Networks and Internetworking 3(3-0-6)
Prerequisite: None
An overview of networking and internetworking technologies. Topics include Open Systems Interconnect (OSI) reference model, Internet Protocol suite, standards, design concepts of protocols, routing algorithms, and applications of networks.

CSS400  Project Development 1(0-3-0)
Prerequisite: Senior standing or consent of Head of School
Practical projects or problems in Computer Engineering for individual students or groups of students under supervision of faculty members. Students are required to submit and present the project proposal to their project committee appointed by the department of School.

CSS403  Computer Engineering Project 6(0-18-0)
Prerequisite: Senior standing or consent of Head of School
Practical projects or problems in Computer Engineering for individual student or group of students under supervision of faculty members. Students are required to submit and present the project report to their project committee appointed by the school.

CSS431  Machine Learning and Pattern Recognition 3(3-0-6)
Prerequisite: None
Introduction to machine learning and statistical decision theory, adaptive classifiers, and supervised and unsupervised learning. Different types of machine learning and pattern recognition systems are introduced, including transducers, feature extraction, and decision units. Techniques for optical character recognition, speech processing, and remote sensing.

CSS432  Information Retrieval 3(3-0-6)
Prerequisite: None

CSS433  Computer Vision 3(3-0-6)
Prerequisite: None

CSS434  Knowledge Representation and Reasoning 3(3-0-6)
Prerequisite: Have earned credits of ITS201 or consent of Head of School
This course concerns how knowledge can be represented symbolically and how it can be manipulated in an automated way by reasoning algorithms. The topics include logic-based knowledge representation, first-order logic, description logic, inference mechanisms, and their applications in ontologies and the Semantic Web.
CSS441  Security and Cryptography  3(3-0-6)
Prerequisite: None
Principles of number theory and the practice of network security and cryptographic algorithms. Topics include primes, random numbers, modular arithmetic and discrete logarithms, conventional or symmetric encryption, and public key or asymmetric encryption, key management, hash functions, digital signatures, certificates and authentication protocols, electronic mail security, web security and protocols for secure electronic commerce. There are some applications, such as smart cards, electronic voting, and some programming topics, e.g., provable security.

CSS442  Computer Interfacing  3(3-0-6)
Prerequisite: Have earned credits of CSS332 or consent of Head of School

CSS443  Real-time and Embedded Systems  3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Design and development of real-time systems, real-time programming and real-time operating systems, multitasking and other concurrent-system concepts, real-time schedulers, process synchronization, memory management, interrupts. Real-time modeling languages, state chart diagrams and sequence diagrams. Real-time systems and embedded system applications.

CSS444  Wireless Networks  3(3-0-6)
Prerequisite: Have earned credits of (ITS327 or CSS334) or
Corequisite: Taking (ITS327 or CSS334) in the same semester or consent of Head of School
Concepts and technologies that allow untethered communications between users and computers, especially in wireless networking. Major topics include: characteristics of wireless communications and mobile devices; wireless personal area networks; wireless local area networks (WLANs); mobile telephone systems and fixed wireless access; mobile Internet technologies and applications; ad-hoc, mesh and sensor networks; design of wireless systems for performance and security.

CSS495  Special Studies in Computer Engineering I  3(3-0-6)
Prerequisite: None
Special study on current topics related to in Computer Engineering.

CSS496  Special Studies in Computer Engineering II  3(3-0-6)
Prerequisite: None
Special study on current topics related to in Computer Engineering.

CSS499  Extended Computer Engineering Training  6(0-40-0)
Prerequisite: Senior standing or consent of Head of School
Extensive on-the-job training of at least 17 weeks at a selected organization that provides Computer Engineering services - an individual comprehensive research or practical project related to the training must be intensively conducted under close supervision of faculty members and supervisors assigned by the training organization. At the end of the training, the student must submit a report of the project and also give a presentation.

EC210  Introductory Economics  3(3-0-6)
Prerequisite: None
A study of the principles of micro and macro economics with applications in basic economic problems; factors that influence supply and demand of products; consumer behavior; important features of perfect and imperfect competitive markets; analysis of Gross National Product; determination of National Income, fiscal and monetary policies; importance of international trade and finance on balance of payment and national income.

ECS201  Basic Circuit Analysis  3(3-0-6)
(For non-major students)
Prerequisite: None

ECS203  Basic Electrical Engineering  3(3-0-6)
(For non-major students)
Prerequisite: None
A service course covering electrical engineering principles and technology for students with major outside electronics and communication engineering. Topics include electrical signals, basic circuit theory, DC and AC circuit analysis, Kirchhoff's law, Thevenin theorem, three-phase circuits, basic electronic devices and circuits, fundamental of operational amplifiers, feedback and control, fundamentals of power systems, DC and AC motors and generators, transformers, loss and efficiency of DC/AC machinery, household/industry wiring and preview of electrical communication systems.

ECS204  Basic Electrical Engineering Laboratory  1(0-3-0)
(For non-major students)
Corequisite: Taking (ECS201 or ECS203) in the same semester or consent of Head of School
Laboratory practice and experimental studies on topics covered in ECS201 or ECS203.
ECS210 Basic Electrical Engineering 1(0-3-0)

Laboratory
Prerequisite: Have earned credits of ECS216 or consent of Head of School
Laboratory practice and experimental studies on topics covered in ECS216.

ECS213 Electrical Engineering Mathematics
Prerequisite: Have earned credits of MAS117 or consent of Head of School
First-order and higher-order ordinary differential equations (ODE's); series solution of ODE's; systems of ODE's; partial differential equations; boundary value problems; vector spaces; basis and dimensions; Cayley-Hamilton theorem; functions of matrices; state-space representation; difference equations; computer-aided software for computation.

ECS216 Circuit Analysis 3(3-0-6)
Prerequisite: None
Current and voltage; circuit elements; Kirchhoff's laws; resistive circuits; circuit analysis techniques such as node analysis, mesh analysis, superposition, and Thevenin's and Norton's equivalent circuits; inductance and capacitance; first-order circuits and their responses; second-order circuits and their responses; sinusoidal steady-state analysis; phasor diagram; three-phase circuits; computer-aided software for circuit analysis.

ECS217 Computer Tools in Electrical Engineering 1(0-3-0)
Prerequisite: None
Basic descriptive geometry: points, lines, planes and their relationships and basic developed views; computer graphics: methods of creating, storing, manipulating, presenting and animating two and three dimensional objects; familiarization with graphical softwares; softwares and tools for electrical engineering: MATLAB, PSPICE, LaTeX, etc.

ECS218 Data Structures, Algorithms, and Object Oriented Programming 3(2-2-5)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Problem-based learning; Concepts of data structures; basic data structures; stacks, queues, linked lists, trees, etc. recursion, hash tables, sorting and searching algorithms; Concepts of Object-oriented Programming; class, inheritance and message passing; Practice in C++ and JAVA programming languages.

ECS231 Electronic Circuits I 3(3-0-6)
Prerequisite: Have earned credits of ECS216 or consent of Head of School

ECS233 Electromagnetics 3(3-0-6)
Prerequisite: Have earned credits of (MAS117 and ECS139) or consent of Head of School

ECS261 Electrical Measurement and Instrumentation 3(3-0-6)
Prerequisite: Have earned credits of (ECS201 or ECS216) or consent of Head of School

ECS281 Signals and Systems 3(3-0-6)
Prerequisite: Have earned credits of (ECS213 or MAS215) or consent of Head of School
Continuous-time and discrete-time signals and systems. Linear systems and their properties. Fourier analysis of continuous-time and discrete-time signals and systems. Sampling and Convolution, reconstruction of signals. Laplace transform and its applications to continuous-time system analysis. Z-transform and its applications to discrete-time system analysis.

ECS300 Electronics and Communication Engineering Training 0(0-0-0)
Prerequisite: Junior standing or consent of Head of School
Practical training in a private sector or governmental departments in related fields of electronics and communication engineering for not less than 240 hours during summer vacation of the third year. Students must submit a report at the end of the training period. A satisfactory (S) grade or an unsatisfactory (U) grade will be given based on the student's performance, quality of the report, and supervisor's comments.

ECS306 Basic Electrical Machines and Power Systems 3(3-0-6)
Prerequisite: Have earned credits of (ECS201 or ECS203 or ECS216) or consent of Head of School
Basic concepts in power system analysis such as phasors, complex power, power factor improvement, three-phase circuits. Voltage, current and power calculations in single phase and three phase systems. Introduction to Magnetic Circuits and Transformers. Basic concept of DC and AC Rotating Machines. Induction motor and synchronous generator: principles, characteristic, operations, and applications.
ECS307 Basic Electromechanical Energy Conversion Laboratory
Prerequisite: Have earned credits of (ECS306 or ECS308) or consent of Head of School
Laboratory practice and experimental studies on topics covered in ECS306 or ECS308.

ECS308 Basic Electromechanical Energy Conversion
Prerequisite: Have earned credits of (ECS201 or ECS203 or ECS216) or consent of Head of School

ECS315 Probability and Random Processes
Prerequisite: Have earned credits of MAS117 or consent of Head of School
Random experiments, events, probability, discrete and continuous random variables, probability density functions, cumulative distribution functions, functions of random variables, expectations; central limit theorem, law of large numbers, central limit theorem; introduction to random processes, random noise, Gaussian random process, autocorrelation, and power spectral density.

ECS320 Electronic Circuits Laboratory
Prerequisite: Have earned credits of ECS322 or consent of Head of School
Laboratory practice and experimental studies on topics covered in ECS231 or ECS322.

ECS322 Electronic Circuits II
Prerequisite: Have earned credits of ECS231 or consent of Head of School

ECS323 Physical Electronics
Prerequisite: Have earned credits of ECS231 or consent of Head of School

ECS332 Principles of Communications
Prerequisite: Have earned credits of ECS281 or consent of Head of School
Corequisite: Taking (ECS315 or IES302) in the same semester or consent of Head of School

ECS341 Mobile Application Programming
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Problem-based learning; principles of mobile application development; programming languages, for mobile devices, such as Linux, JAVA, .NET, C/C++, Mac; syntax and library usage; hands-on practice on a suitable software development kit (SDK); current and future trends of mobile applications.

ECS352 Telecommunications
Prerequisite: Have earned credits of ECS332 or consent of Head of School

ECS363 Mechatronic Instrumentation
Prerequisite: Have earned credits of (ECS203 or ECS216) and (MES310 or MES211) or consent of Head of School
Analysis, characteristics and applications of instruments used in engineering mechatronics including transducers, sensors, actuators, etc. Measurement principles. Integrated sensors actuators. Programmable Logic Control (PLC) Data Acquisition Systems.

ECS364 Introduction to Mechatronics
Prerequisite: None
Introduction to integration of mechanical, electrical, and computer systems for information processing and control of machines and devices. Basic electronics, signal processing, micro-controller and microprocessor, sensors and actuators. Control architecture in mechatronic systems. Overview of electro-mechanical design and embedded systems in topics of current interest in mechatronics.
ECS370 Digital Circuit Laboratory 1(0-3-0)
Corequisite: Taking ECS371 in the same semester or consent of Head of School
Laboratory practice and experimental studies on topics covered in ECS371.

ECS371 Digital Circuits 3(3-0-6)
Prerequisite: None

ECS380 Feedback Control Laboratory 1(0-3-0)
Prerequisite: Have earned credits of ECS381 or consent of Head of School
Laboratory practice and experimental studies on topics covered in ECS381.

ECS381 Feedback Control Systems 3(3-0-6)
Prerequisite: Have earned credits of (ECS201 or ECS216) or consent of Head of School
System representation. Mathematical models of systems. Closed-loop and open-loop control systems. Transfer functions. Signal flow graphs. Stability of linear control systems. Stability analysis techniques. Time-domain analysis and frequency-domain analysis of control systems. Time-domain design and frequency-domain design of control systems. Compensations. Introduction to computer-aided control analysis and design. Although MAS215 is not a required course, the knowledge gained from this would be of great benefit to students of ECS381 and is therefore recommended.

ECS382 Microprocessors 3(3-0-6)
Prerequisite: Have earned credits of ECS371 or consent of Head of School
Microprocessor architecture, instruction sets assembly language programming, microprocessor interfacing, applications, introduction to DSP processors, practical projects and assignments.

ECS386 Introduction to Embedded System 3(3-0-6)
Prerequisite: Have earned credits of ECS370 or consent of Head of School
Concepts of timing and clocks; task-modeling and real-time operating system; processors; signal digitization and conditioning; memory; interfacing; state-machine and concurrent processes; encoding and flow control; formal verification.

ECS396 Project Development 1(0-3-0)
Prerequisite: Senior standing or consent of Head of School
Practical projects or problems in communications for individual students or groups of students under supervision of faculty members. Students are required to submit and present the project proposal to their project committee appointed by the program.

ECS398 Electronics and Communication Engineering Project 6(0-18-0)
Prerequisite: Have earned credits of ECS396 or consent of Head of School
The continuation of ECS396 to the completion stage of the project. Students are required to submit complete project reports and present project results to their project committee.

ECS399 Extended Electronics and Communication Engineering Training 6(0-40-0)
Prerequisite: Senior Standing or consent of Head of School
Full-time research or practical training under close supervision of faculty members and assigned supervisors from the Electronics and/or Communication Engineering-related company for at least 17 weeks. Evaluation based on the project achievement, project report, and final oral presentation.

ECS424 Analog Integrated Circuits 3(3-0-6)
Prerequisite: Have earned credits of ECS322 or consent of Head of School

ECS425 Digital Integrated Circuits 3(3-0-6)
Prerequisite: Have earned credits of ECS322 or consent of Head of School

ECS427 Introduction to VLSI Design 3(3-0-6)
Prerequisite: Have earned credits of (ECS371 and ECS322) or consent of Head of School
Introduction to design and fabrication of very large scale integrated systems using NMOS and CMOS technologies. CAD tools and computer-aided design. Use of state-of-the-art design methodologies and tools. Testing and design for testability. Modularity, parallelism, local communications, fault tolerance.

ECS441 Communication Electronics 3(3-0-6)
Prerequisite: Have earned credits of ECS322 or consent of Head of School
RF and power amplifiers, oscillators, phase-locked loops, filters, carrier modulators and demodulators, analog-to-digital and digital-to-analog converters, examples of commercially available integrated circuits for communication systems.
ECS442 Microwave Principles 3(3-0-6)
Prerequisite: Have earned credits of ECS233 or consent of Head of School

Problem-based learning; Maxwell's equations and boundary conditions, transmission-line theory, s-parameters, using Smith charts, impedance matching, microwave transmission line and waveguides, microwave resonators and filters, microwave network analysis, power dividers and directional couplers, microwave measurement and applications.

ECS450 Signal Processing and Communication Laboratory 1(0-3-0)
Prerequisite: Have earned credits of ECS332 and ECS472 or consent of Head of School

Sampling and reconstruction of signals, digital filter design and hardware implementation, real-time filtering, AM-FM modulation/demodulation, basic digital communication technique, spectrum analysis, power measurement, DSP system simulation.

ECS451 Data Communications and Networks 3(3-0-6)
Prerequisite: None

Network models, OSI layers and protocols, TCP/IP, VOIP, wide-area and local-area networks, routing algorithms and switching techniques, networking equipment, such as ATM, router, and bridge.

ECS452 Digital Communication Systems 3(3-0-6)
Prerequisite: Have earned credits of ECS332 or consent of Head of School


ECS453 Satellite Communication Systems 3(3-0-6)
Prerequisite: Have earned credits of ECS332 or consent of Head of School


ECS455 Mobile Communications 3(3-0-6)
Prerequisite: Have earned credits of ECS332 or consent of Head of School

Principles of cellular radio, mobile radio propagation and channel modeling, multiple access methods, physical and logical channels, digital mobile communication systems: TDMA, GSM, CDMA, WCDMA, multi-carrier and OFDM systems.

ECS456 Optical Communications 3(3-0-6)
Prerequisite: Have earned credits of ECS233 or consent of Head of School


ECS462 Antennas 3(3-0-6)
Prerequisite: Have earned credits of ECS233 or consent of Head of School

Problem-based learning; Basic definitions and theorems, formulation of the radiation problems, isotropic point source, power and field patterns, directivity and gain, radiation impedance, wave polarization, radiation from current elements. Analysis and design of linear wire antenna, linear array antenna, Uda-Yagi antenna, log-periodic antenna, aperture antenna. Antenna measurement techniques.

ECS465 Biomedical Instrumentation 3(3-0-6)
Prerequisite: Have earned credits of ECS261 or consent of Head of School


ECS472 Digital Signal Processing 3(3-0-6)
Prerequisite: Have earned credits of ECS281 or consent of Head of School

Discrete-time signals and systems. Linear time-invariant systems and their properties. Sampling of continuous-time signals and convolution. IIR and FIR filter designs. Effects of finite word length. The discrete Fourier transform. Fast Fourier transform algorithms. Relations between Fourier Transform (FT), Discrete-frequency FT (DFFT) or Fourier series, Discrete-time FT (DTFT), and Discrete FT (DFT: Discrete both time & frequency).

ECS475 Digital Image Processing 3(3-0-6)
Prerequisite: Have earned credits of ECS281 or consent of Head of School

ECS477  Signal Processing for Communication Systems  3(3-0-6)
Prerequisite: Have earned credits of ECS472 or consent of Head of School
Problem-based learning; Speech coding and decoding, image coding and decoding, transmultiplexers, filter banks, channel estimation, channel equalization, synchronization, array processing, power spectral estimation, adaptive filtering, ADC and DAC algorithms.

ECS478  Introduction to Computer and Vision Pattern Recognition  3(3-0-6)
Prerequisite: None (ECS475 Digital Image Processing is recommended.)

ECS481  Introduction to Robotics  3(3-0-6)
Prerequisite: Have earned credits of ECS381 or consent of Head of School
Operation principles, analysis, and design of robots. Mechanical manipulators: kinematics, dynamics, trajectory planning, and control. Robotic vision and visual feedback. Robot programming languages. Control algorithm design. Current topics of interest from the literature.

ECS483  Linear System Theory  3(3-0-6)
Prerequisite: Have earned credits of ECS381 or consent of Head of School

ECS485  Dynamic Systems and Control  3(3-0-6)
Prerequisite: Have earned credits of MES351 or consent of Head of School
Mathematical modeling of mechanical, electrical, pneumatic, hydraulic and combined physical systems using a unified approach such as Bond graph technique. Introduction state-variables, system response, stability using Laplace transform technique. System characteristics: controllability and observability. Open and closed loop responses of control systems. Solution to state equation by direct analysis and digital computer methods.

ECS486  Embedded System Development Project  3(2-2-5)
Prerequisite: Have earned credits of ECS386 or consent of Head of School
Problem-based learning; hands-on experience on embedded system design; embedded programming using high-level programming language; applications of real-time operating system for embedded system; hardware and software co-design techniques and verification techniques; system testing.

ECS491  Electronics and Communication Engineering Seminar I  1(0-3-0)
Prerequisite: Senior standing or consent of Head of School
Presentation and discussion of recent advances and research in electronics and communication engineering by guest lecturers, faculty, and students. Topics may vary from semester to semester. S/U grading.

ECS492  Electronics and Communication Engineering Seminar II  1(0-3-0)
Prerequisite: Senior standing or consent of Head of School
Presentation and discussion of recent advances and research in electronics and communication engineering by guest lecturers, faculty, and students. Topics may vary from semester to semester. S/U grading.

ECS493  Special Topics in Electronics and Communication Engineering I  3(3-0-6)
Prerequisite: None
New topics or areas of study not offered in other electronics and communication engineering courses. Topics may vary from semester to semester.

ECS495  Special Topics in Electronics and Communication Engineering II  3(3-0-6)
Prerequisite: None
New topics or areas of study not offered in other electronics and communication engineering courses. Topics may vary from semester to semester. Topic covered is different from ECS493.

ECS496  Special Study in Electronics and Communication Engineering I  3(3-0-6)
Prerequisite: Consent of Head of School
This course is intended for students who wish to participate in an exchange program. It is designed for topics related to current development and fundamental knowledge in electronics and communication engineering technologies, but not presently offered as either a required or technical elective.

ECS497  Special Study in Electronics and Communication Engineering II  3(3-0-6)
Prerequisite: Consent of Head of School
This course is intended for students who wish to participate in an exchange program. It is designed for topics related to current development and fundamental knowledge in electronics and communication engineering technologies, but not presently offered as either a required or technical elective.
EL070  English Course I  0(3-0-6)
Prerequisite: Language Institute placement
A non-credit course designed for those students with low English scores who are unable to enroll directly into the English foundation course (The assessment criteria are 'S' for Satisfactory or 'U' for Unsatisfactory and will not be counted towards the students' total credits and GPA).
A preparatory course designed to enable students to cope up with real English use of four basic integrated skills of listening, speaking, reading and writing.

EL171  English Course II  3(3-0-6)
Prerequisite: Have earned credits of EL070 or Language Institute placement
An intermediate English course designed to promote four integrated skills to develop students' English proficiency at a higher level.

EL172  English Course III  3(3-0-6)
Prerequisite: Have earned credits of EL171 or Language Institute placement
An upper-intermediate English course to enable students to use integrated skills at a more sophisticated level than the prior course especially in speaking and writing.

EL210  English for Engineering I  3(3-0-6)
Prerequisite: Have earned credits of EL172
A course to practice English skills in engineering contexts with an emphasis on reading, writing, listening, and speaking. Texts, selected passages, and other materials of medium length in engineering, are included.

GTS101  Skills Development for Technical Studies  3(3-0-6)
Prerequisite: None
Development of techniques for effective study in college. Covers time management, motivation, taking notes from books and lectures, memory training, and reading strategies. Studying for and taking exams, using libraries, teaching/learning styles, and basic strategies for learning any new content.

GTS111  Mathematical Analysis for Management Science  3(3-0-6)
Prerequisite: None
Elementary matrices - matrix addition, matrix multiplication, matrix inversion, applications in population dynamics; probability - sets and counting, Venn diagrams, permutation and combination; statistics - describing data, numerical measures, probability distributions, uniform probability distributions, conditional probabilities and tree diagrams, discrete probability distributions, binomial probability distributions, normal probability distributions and normal approximation to the binomial distribution.

GTS112  Linear Algebra  3(3-0-6)
Prerequisite: Have earned credits of GTS111 or consent of Head of School
Matrices and systems of linear equations; Hermitian matrices and unitary matrices; LU factorizations; determinant; Cramer's rule; vector spaces; linear independence; bases; dimensions; rank of matrices; orthogonality; eigenvalues and eigenvectors; reduction of matrices to diagonal forms.

GTS116  Mathematics for Technologists I  3(3-0-6)
Prerequisite: None
Introductory calculus: a course on the differential and integral calculus of functions of one variable. Topics include limits and continuity of functions, origin and definition of the derivative, exponential, and logarithmic forms, origin and definition of anti-derivative; integral calculus; indefinite integrals. Taylor's Theorem for a function of two variables; introduction to differential equations.

GTS117  Mathematics for Technologists II  3(3-0-6)
Prerequisite: Have earned credits of GTS116 or consent of Head of School
Introduction to vectors, curves, and surfaces in space; partial differentiation; directional derivatives and the gradient vector; integration, techniques of integrations, and logarithmic functions. Three-dimensional analytic geometry. Differential and integral calculus of functions of two or three variables: partial derivatives, multiple integrals, Lagrange multipliers, and Green's Theorem.

GTS121  General Science I  3(3-0-6)
Prerequisite: None

GTS122  General Science II  3(3-0-6)
Prerequisite: None
Interplay of structure and function, particularly at the molecular, cellular, and organismal level of organization. Study of the characteristics of the major groups of plant and animal life. Introduction to the principles and applications of microbiology, with a study of the general characteristics of microorganisms and their applications.

GTS132  Introduction to Biological Science  3(3-0-6)
Prerequisite: None
Interdisciplinary study of the living world, covering a variety of topics ranging from biological molecules and metabolism of organic compounds, genes, and their functions to more complex topics in human biology, biotechnology, bioinformatics, and other applications.
GTS133 Environmental Studies 3(2-2-5)
Prerequisite: None

GTS201 Standardized English Tests 2(2-1-3)
Prerequisite: Have earned credits of EL172 or consent of Head of School
This course will prepare students to take standardized English tests. The structure and content of each test will be examined in detail in order to familiarize students with the different sections. Different types of questions will be considered and students will learn how to answer each type. A review of speaking, listening, reading, and writing skills will be covered. Sample tests will be given for each skill, including reading, writing, listening, and speaking.

GTS202 English Language Structures 3(3-0-6)
Prerequisite: Have earned credits of EL172 or consent of Head of School
The course aims to further develop students’ English proficiency. The course emphasizes academic writing from basic sentences and paragraphs to more complex structures. The English structures covered in this course will aid the students in preparing for standardized English examinations.

GTS210 Mathematics for Technologists III 3(3-0-6)
Prerequisite: Have earned credits of GTS117 or consent of Head of School
This course includes the study of vectors in the plane and space, systems of linear equations, vectors, vector spaces, linear transformations, inner products, eigenvalues and eigenvectors.

GTS212 Calculus for Technologists I 3(3-0-6)
Prerequisite: None

GTS213 Calculus for Technologists II 3(3-0-6)
Prerequisite: Have earned credits of GTS212 or consent of Head of School

GTS231 Law and Technology 3(3-0-6)
Prerequisite: None
Study of relations between law and technology - exploration of issues in both private and public laws pertaining to the application of technology. Implications of technology on law development internationally. Legal issues involving e-commerce, e-contracting, intellectual property, privacy, torts, consumer protection, product liability, professional negligence, professional liability, environmental and natural resources, legal principles on common commercial transaction and business organizations.

GTS302 Technical Writing 2(2-1-3)
Prerequisite: Have earned credits of EL172 or consent of Head of School
Students learn and practice writing and presentation of technical reports, which include reports of laboratory experiments, in-depth technical reports, overview articles of technical topics for the general public, as well as executive summaries.

GTS303 Communications in Business 2(2-1-3)
Prerequisite: Have earned credits of EL172 or consent of Head of School
This course teaches the organizational skills needed to prepare for writing business/marketing ideas. First, ideas are organized. These ideas are transformed into well written short paragraphs. Next, the paragraphs are edited. Students participate in editing other students’ writings. Students present some of their original work to the rest of the class through poster presentations and short speeches. In addition, students are required to produce a business/marketing style resume.

GTS401 Intensive English Proficiency 6(6-0-12)
Prerequisite:
1. Student has completed all course work according to respective curriculum.
2. Student has taken at least 5 times an acceptable English proficiency test (TOEFL, TU-GET, IELTS, TOEIC, or Institutional TOEFL).
3. Student should have a minimum score of 400 for paper-based TOEFL, or equivalent score when using other tests.

Students who pass this course will have similar English skills to those students who satisfy the English Proficiency requirement. The course content will be based primarily on the Institutional TOEFL (ITP) exam; however, materials may be drawn from other tests (e.g., IELTS or TOEIC). Strategies for answering the different types of exam questions will be discussed and practiced in class. Special emphasis will be placed on helping students improve their individual weaknesses in the listening, reading, or structure sections of the exam. An S (satisfactory) or U (unsatisfactory) grade is given.
IES201 Industrial Engineering Mathematics 3(3-0-6)
Prerequisite: Have earned credits of MAS117 or consent of Head of School
This course presents elementary differential equations and numerical methods for industrial engineers. Emphases are placed on first-order ordinary differential equations; linear ordinary differential equations of higher order; power series representation and gamma functions; Laplace and inverse transform methods; mathematical modeling, computers, and error analysis; fundamentals of unconstrained and constrained optimizations such as golden-section search, quadratic interpolation, gradient methods, and linear programming; least-squares regression; interpolation. Some heuristic algorithms such as Simulated Annealing, Particle Swarm Optimization, etc., will also be introduced. The implementation of these techniques using mathematical software packages, e.g., MATLAB and/or LINGO, for Industrial Engineering applications will also be covered.

IES301 Manufacturing Tools and Operations 3(2-3-4)
Prerequisite: None
This course emphasizes fundamentals of engineering and measurement, particularly the correct and safe use of machine tools. Students are provided with hands-on experience in fitting, welding, foundry, and fabrication.

IES302 Engineering Statistics 3(3-0-6)
Prerequisite: Have earned credits of (MAS117 or GTS117) or consent of Head of School
This course discusses fundamentals of probability, discrete and continuous probability distributions, conditional probability, moment generating functions, discrete and continuous random variables, sampling distributions, hypothesis testings of the means, variances, and proportions. Regression analysis will also be introduced.

IES303 Engineering Management and Cost Analysis 3(3-0-6)
(For Non-Industrial Engineering Students)
Prerequisite: None
The course presents a broad and fundamental view of management system (in both its classical and modern aspects), including its structures and functions of interrelated departments. Philosophy and quantitative aspects of inventory management, quality assurance, project management, etc. are emphasized. Students are also introduced to basic concepts and applications of an economic evaluation of engineering projects. Topics covered include interest formulas, time value of money, economic decision making involving several alternatives, etc. This course is not intended for industrial engineering students.

IES304 Industrial Engineering Training 0(0-0-0)
Prerequisite: Junior standing
Students are provided with on-the-job training at selected modern industrial or service facilities. The purpose of the course is to allow the students opportunities to observe how industrial engineers function, to learn how to collaborate with co-workers, and to develop self-responsibility. The training period must not be less than 240 hours. Students must submit a report at the end of the training period. A Satisfactory (S) or Unsatisfactory (U) grade will be given based on student's performance, quality of the report, and supervisor's comments.

IES305 Industrial Engineering Project I 1(0-3-0)
Prerequisite: Senior standing or consent of Head of School
The first course in the senior project course series. A student team will be given a real world problem which they must determine appropriate approaches and actions to obtain feasible solutions. This involves establishment of initial contacts, project proposal development, preliminary data collection, data analysis, verification of the results, and practical implementation. A presentation of the progress and a submission of the status report are due at the end of the semester.

IES312 Methods Analysis and Work Measurement 3(3-0-6)
Prerequisite: None
This course emphasizes the measurement and evaluation of work methods and how improvement can be introduced. Topics include visual and micromotion study techniques, motion economy, time study, and work sampling. The development and use of standard time data and computerized techniques will be covered.

IES313 Industrial Plant Design 3(3-0-6)
Prerequisite: None
Modern methods applied to facility layout and location design are discussed. Logistics of motion of people and materials, flow analysis, plant layout, and material handling techniques are covered. Students will study the mathematical approaches and computer packages applicable for solving facility layout and location problems.

IES315 Methods Analysis and Work Measurement Laboratory 1(0-3-0)
Corequisite: Taking IES312 in the same semester or consent of Head of School
This laboratory course demonstrates a practical use of modern apparatus available for motion and time study applications. Process charts and a time study board will be utilized to not only analyze manufacturing and service operations, but also to improve productivity.

IES321 Operations Research I 3(3-0-6)
Prerequisite: Have earned credits of (MAS210 and IES302) or consent of Head of School
Basic operations research models, algorithms, and their applications are discussed in this course. Topics covered are linear programming and its extensions; transportation model; game theory; network flow analysis; queueing theory; and simulation modeling.
IES323 Production Planning and Control
Prerequisite: None
A study of the components and functions of integrated production, planning, and control systems. Consideration is given to material, equipment, and manpower requirements for optimizing continuous and intermittent manufacturing operations. Topics discussed include demand forecasting, hierarchical production planning, capacity planning, line balancing, operation sequencing, and scheduling, etc.

IES324 Production Sequencing and Scheduling
Prerequisite: Have earned credits of IES323 or consent of Head of School
This course discusses techniques of sequencing and scheduling for job shops, flow lines, and other general manufacturing and production systems. Both deterministic and stochastic models are introduced.

IES331 Quality Control
Prerequisite: Have earned credits of IES302 or consent of Head of School
Methods used to achieve higher product quality, to prevent defects, to locate chronic sources of trouble, to measure process capability, and to use inspection data to regulate manufacturing processes are emphasized. Preparation of statistical control charts and selection of suitable sampling plans are discussed. Total quality control, quality control circles, and ISO 9000 standards are also studied.

IES332 Factory Automation and Control Methods
Prerequisite: None
This course discusses the design, automation, and integration of supporting subsystems in the overall manufacturing environment. These subsystems include flexible manufacturing system (FMS) cells, robotic cells, automated warehousing (AS/RS), automated material handling systems (conveyor, AGV, etc), and automated inspection systems. Their functional characteristics and computerized controls are covered. Additionally, the course discusses linear and proportion-integral-differential (PID) control systems, system reliability analysis, open and closed loop control systems, system response, etc.

IES333 Metrology
Prerequisite: Have earned credits of SCS139 or consent of Head of School
This course is a problem-based course on metrology. This course involves the principles and applications of precision or fine measuring equipment, e.g., optical, laser, and electro-magnetic devices. Standards and accuracy of measurement are also discussed.

IES334 Industrial Robotics and Applications
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Intended to provide students with a knowledge of robotics in manufacturing systems. The field of robotics is studied with emphasis given to the role of programmable robots in manufacturing. Students will obtain hands-on experience about hardware and software available for various industrial robot systems.

IES335 Industrial Cost Analysis and Control
Prerequisite: None
The course provides an understanding of the tools and techniques applicable for cost analysis and control. Topics discussed include financial analysis of the accounting system, standard costs, variance analysis, cost-volume-profit relationships, cost estimation, and utilization of accounting data for control of operations.

IES336 Safety Engineering
Prerequisite: None
The principles and practices of safety engineering in product and facilities design are discussed. Among the topics treated are safe practices and hazard control, safety standards and codes, inspection procedures, governmental regulations, and safety statistics. The Occupational Safety and Health Act (OSHA) and Thai legislation will be examined and compared. Engineering ethics, moral principles, and social responsibility are also covered.
IES345 Project Feasibility Study 3(3-0-6)
Prerequisite: Have earned credits of IES341 or consent of Head of School
This course is a problem-based course on a project feasibility study. Fundamental concepts of a project feasibility study is discussed in detail. The course emphasizes essential qualitative and quantitative aspects of the feasibility study such as marketing evaluation, proposal development (preparation and presentation), economic analysis, project planning and scheduling, etc.

IES351 Maintenance Engineering 3(3-0-6)
Prerequisite: None
The course emphasizes the concepts and utilizations of maintenance as applicable to industrial and service systems. Examples of topics included are industrial safety and productivity aspects of maintenance, reliability of system components, preventive and emergency maintenance, scheduling of maintenance activities, etc.

IES364 Manufacturing Processes and Technologies 3(3-0-6)
Prerequisite: Have earned credits of IES361 or consent of Head of School
This course covers non-traditional manufacturing processes and technologies for metal parts, and those for plastic and composite-material parts. Manufacturing processes for electronic devices, and printed circuit boards are studied.

IES365 Jig, Fixture, and Mold Design 3(3-0-6)
Prerequisite: Have earned credits of (IES301 and MES302) or consent of Head of School
This course covers fundamentals of jig, fixture, and mold design. The topics include types, classifications, functions, and applications of jig, fixture, and mold, and also design economics. Computer aided design (CAD) concept is introduced to develop jig, fixture, and mold. Hands-on exercises of CAD are provided.

IES371 Engineering Management 3(3-0-6)
Prerequisite: None
This course is specifically designed for industrial engineering students to appreciate the applications of industrial engineering techniques in managing both manufacturing and service systems. Students learn the fundamentals of engineering economics and gain an understanding of the management process. Major topics covered include concepts and theories of modern management, capital investment justification methods, project organization and management, legal, quality, and staffing issues.

IES372 Materials Management and Inventory Control 3(3-0-6)
Prerequisite: Have earned credits of IES323 or consent of Head of School
This course emphasizes the philosophy of materials management and quantitative techniques used in controlling inventories in an organization. Classifications of inventory from different perspectives are presented. Both deterministic and probabilistic inventory models are discussed. Modern materials management systems, e.g., MRP-II and JIT, are also studied.

IES374 Management Information Systems 3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Structure and design of computer-based information systems are discussed. Topics included are computer hardware and software, database models, database management systems, system analysis, design, and implementation.

IES376 Logistics and Supply Chain Management 3(3-0-6)
Prerequisite: None
This course is specifically designed for students to understand the principles of logistics and supply chain management. Major topics include logistic planning,
cooperation and management in the supply chain, transportation, material purchasing and inventory control, packaging, integration between production planning and distribution among partners in the chain, and information systems. The present and future roles of logistics in the supply chain management are also discussed.

IES391  Applied Statistical Methods  3(3-0-6)
Prerequisite: Have earned credits of IES302 or consent of Head of School
This course emphasizes statistical analysis techniques and their applications. Topics discussed include a review of hypothesis testing, goodness-of-fit tests, regression analysis, and analysis of variance. Special attention is given to their applications in engineering fields.

IES392  Systems Simulation  3(3-0-6)
Prerequisite: Have earned credits of IES302 or consent of Head of School
This course is a problem-based course on systems simulation. This course introduces the application of discrete time simulation modeling for the analysis of complex manufacturing and service systems, using case examples in warehousing, material handling, banking, etc. Applications of continuous time and combined discrete-continuous simulation modeling will also be illustrated. Students will gain first-hand practice on how to use state-of-the-art simulation software through a series of laboratory exercises or a realistic semester project.

IES394  Artificial Intelligence in Industrial Engineering  3(3-0-6)
Prerequisite: None
To provide insight into concepts and techniques of intelligent systems. Topics covered include search methodologies, knowledge representation, components of knowledge-based systems, design of knowledge bases, and inferencing. Applications of knowledge-based systems in design of products, processes, systems as well as machine diagnostics, production planning and scheduling will also be introduced.

IES395  Special Topics in Industrial Engineering I  3(3-0-6)
Prerequisite: None
This course is designed for topics related to industrial engineering, but not presently offered as either a required or technical elective.

IES396  Special Topics in Industrial Engineering II  3(3-0-6)
Prerequisite: None
This course is designed for topics related to industrial engineering, but not presently offered as either a required or technical elective. Topics covered are different from IES395.

IES401  Industrial Engineering Project II
Prerequisite: Have earned credits of IES305 or consent of Head of School
A continuation of IES305. An individual student or a team of students will work on the individual or group projects assigned to them. The projects can be intensively conducted in industry or within the institute. After a project is completed, students are responsible for submitting their final report and giving a presentation.

IES402  Special Study in Industrial Engineering I  3(3-0-6)
Prerequisite: Consent of Head of School
This course is intended for students who wish to participate in an exchange program. It covers new topics or areas of study related to industrial engineering, but not presently offered as either a required or technical elective. Topics covered are different from IES403.

IES403  Special Study in Industrial Engineering II  3(3-0-6)
Prerequisite: Consent of Head of School
This course is intended for students who wish to participate in an exchange program. It covers new topics or areas of study related to industrial engineering but not presently offered as either a required or technical elective. Topics covered are different from IES402.

IES404  Extended Industrial Training  6(0-40-0)
(For Extended Industrial Training Track)
Senior standing or consent of Head of School
Students are provided with extensive on-the-job training at selected modern industrial facilities. The purpose of the course is to allow the students opportunities, to work and intensively conduct an individual research or practical project for at least 17 weeks under the close supervision of faculty members and main supervisors assigned by the training company. After the project is completed, students are responsible for submitting their final reports and giving a presentation.

ITS100  Introduction to Computers and Programming  3(2-3-4)
Prerequisite: None
Computer system components and organization. Hardware and software interaction. Introduction to data processing and databases. Algorithms and programming languages. Programming in high-level languages. Program design and development. Practical laboratories are essential parts of the course, designed to develop students’ programming skills and understanding of computer system. These skills are important foundations for other technical courses.

ITS101  Programming and Algorithms  3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
ITS102  Object Oriented Programming  3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Concepts of object oriented programming and introduction to software engineering principles. Topics include data structure fundamentals; abstraction; encapsulation; inheritance; polymorphism; overloading; pointer and reference variables; recursion and various important algorithms. Modeling and application with classes, member functions, constructors and destructors, public, private and protected access, static and non-static members, virtual functions, and standard I/O.

ITS103  Object-oriented Programming  Laboratory  1(0-3-0)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Hands-on practice and experiments of topics in object-oriented programming.

ITS201  Discrete Mathematics  3(3-0-6)
Prerequisite: None

ITS211  Data Structures and Algorithms  3(3-0-6)
Prerequisite: Have earned credits of ITS102 or consent of Head of School
Concepts of data structures; data structures and programming; basic data structures: stacks, queues, linked lists, trees, graphs, etc.; recursion; hash tables; sorting and searching algorithms.

ITS224  Numerical Computation  3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School

ITS227  Algorithm Design  3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Definitions of algorithm, analysis of algorithm, divide and conquer, dynamic programming, graph algorithms, greedy algorithms, state space searches, NP-completeness and intractability. Hands-on practice on algorithm design and implementation.

ITS229  Human Computer Interface Design  3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School

ITS231  Data Structures and Algorithms Laboratory  1(0-3-0)
Prerequisite: Have earned credits of ITS221 or consent of Head of School
Hands-on practice and experiments of topics on data structures and algorithms.

ITS300  Information Technology Training  0(0-0-0)
Prerequisite: Junior standing or consent of Head of School
Practical training in the private sector or governmental departments in the field of Information Technology. Not less than 240 hours during the summer vacation of the third year. Students must submit a report to his/her supervisor who will decide for the final grade of either satisfactory (S) or unsatisfactory (U).

ITS322  Database Systems  3(3-0-6)
Prerequisite: None
Database systems architectures; relational data models; query languages; database security, integrity, and concurrency.

ITS323  Introduction to Data Communications  3(3-0-6)
Prerequisite: None
An overview of basic knowledge related to the process of data exchange between computers. Topics include analog and digital data transmission systems, various network topologies, client-server models, and structure/mechanism of the 5-layer simplified OSI model: application, transport, network, data-link, and physical layers.

ITS327  Computer Network Architectures and Protocols  3(3-0-6)
Prerequisite: None
Network models; OSI layers; transmission media; local area networks; design concepts of protocols; routing algorithms; applications of networks.

ITS329  System Analysis and Design  3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Software models and software modeling methodologies. Basic abstraction mechanisms in software modeling. Modeling techniques, process, and languages. Software development process. Object-oriented system analysis and design. Hands-on practice on software development process and system analysis and design.

ITS335  IT Security  3(3-0-6)
Prerequisite: None
Introduction to computer security and cryptography: security services, threats and attacks, encryption, authentication, digital signatures. Software security: database security, security of general purpose operating...

**ITS336  Artificial Intelligence  3(3-0-6)**
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Overview of current research and applications of artificial intelligence. Introduction to the languages of artificial intelligence such as Prolog or LISP. Search techniques. Knowledge representation, reasoning, inference. Machine learning. Expert systems.

**ITS341  Management Information Systems  3(3-0-6)**
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Structure and design of computer-based information systems. Topics included are computer hardware and software, database models, database management systems, system analysis, design and implementation.

**ITS342  Computer Animation  3(2-3-4)**
Prerequisite: Have earned credits of CSS221 or consent of Head of School
Introduction to techniques for computer animation such as keyframing, procedural methods, motion capture, and simulation. Overview and implementation of storyboarding, scene composition, lighting and sound track generation. 2D & 3D images and animations application software.

**ITS344  Web and Business Application Development  3(3-0-6)**
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Introduction to integrated web-based system, concepts of web programming on business application development, programming with an emphasis on business applications. Transaction processing systems and management support systems. Principles of web-based application design; including programming structures, data structures, program testing, debugging, implementation of programs with graphical user interfaces and event driven code.

**ITS351  Database Programming Laboratory  1(0-3-0)**
Prerequisite: Have earned credits of ITS231 or consent of Head of School

**ITS352  Networking Laboratory  1(0-3-0)**
Prerequisite: Have earned credits of ITS233 or CSS331 or consent of Head of School
Hands-on practice with the administration of computer networks and the development of computer network applications. Topics include: configuring network interfaces, designing and building switched and routed networks, monitoring network activities, and programming client/server applications.

**ITS353  Graphic and Game Programming Laboratory  1(0-3-0)**
Prerequisite: Have earned credits of ITS231 or consent of Head of School
Hands-on practice and experiments of topics on graphic design and modeling. Applications of graphic on game programming. Game programming, Graphic design tools. Design of user interface for game applications. Design of game applications.

**ITS400  Project Development  1(0-3-0)**
Prerequisite: Senior standing or consent of Head of School
Practical projects or problems in Information Technology for individual students or groups of students under supervision of faculty members. Students are required to submit and present the project proposal to their project committee appointed by the school.

**ITS403  Information Technology Project  6(0-18-0)**
Prerequisite: Senior standing or consent of Head of School
Practical projects or problems in information technology for individual student or group of students under supervision of faculty members. Students are required to submit and present the project report to their project committee appointed by the school.

**ITS412  Tele-services and Services Architecture  3(3-0-6)**
Prerequisite: Have earned credits of ITS327 or Corequisite: Taking ITS327 in the same semester or consent of Head of School
In modern telecommunications, service providers experience market expansion and changes in service provisioning technologies. This course aims at presenting students with an architectural foundation, which is based on the convergence of computer, telecommunication, an digital content technologies. Topics include Intelligent Networks, Common Object Request Broker Architecture (CORBA), and common service architectures available in several telecommunication standards.
ITS413  Internet Technologies and Applications  3(3-0-6)
Prerequisite: Have earned credits of ITS327 or consent of Head of School
Corequisite: Taking ITS327 in the same semester or consent of Head of School
An overview of Internet technologies and applications. Topics to be covered include TCP/IP first generation (IPv4), TCP/IP new generation (IPv6), integration with ATM, new infrastructures (e.g., Internet 2, gigapops, IP over SONET, and IP over WDM), IP telephony, video over IP, multimedia applications over IP.

ITS423  Data Warehouses and Data Mining  3(3-0-6)
Prerequisite: Have earned credits of ITS322 or consent of Head of School
The course will introduce data warehousing and data mining, and study their principles, algorithms, implementations, and applications. Topics include data warehousing technology: data cube methods, data warehouse construction and maintenance; data mining techniques: characterization, association, classification, clustering, and similarity-based mining.

ITS424  Electronic Commerce  3(3-0-6)
Prerequisite: None
The course will introduce students to the underlying economic aspects of the electronic marketplace in order to provide them with an understanding of its foundations for the development of new business models. Topics included are electronic commerce and the Internet, characteristics of digital products and processes, product information, market efficiency, copyright protection, and electronic payment systems.

ITS432  Mobile Application Programming  3(2-3-4)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Problem-based learning; principles of mobile application development; programming languages, for mobile devices, such as JAVA, .NET, C/C++, Object-C; syntax and library usage; hand-on practice on a suitable software development kit (SDK); current and future trends of mobile applications.

ITS442  Entrepreneurship for IT Business Development  3(3-0-6)
Prerequisite: None
Technology viability assessment, legal issues associated with forming a new company, competitive positioning, market analysis and market opportunity assessment, product life-cycle planning, marketing strategy, organization management, intellectual property management, patenting, technopreneurship, business plan, venture capital, entrepreneurial ethics.

ITS481  Topics in Hardware and Communications I  3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Hardware and Communications.

ITS482  Topics in Hardware and Communications II  3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Hardware and Communications.

ITS483  Topics in Hardware and Communications III  3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Hardware and Communications.

ITS485  Topics in Software Technology I  3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Software Technology.

ITS486  Topics in Software Technology II  3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Software Technology.

ITS487  Topics in Computer Information Systems I  3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Computer Information Systems.

ITS488  Topics in Computer Information Systems II  3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Computer Information Systems.
IT5489 Topics in Computer Information Systems III 3(3-0-6)
Prerequisite: Consent of Head of School
Topics of current interest in Computer Information Systems.

IT5495 Special Studies in Information Technology I 3(3-0-6)
Prerequisite: None
Special study on current topics related to Information and Communication Technology

IT5496 Special Studies in Information Technology II 3(3-0-6)
Prerequisite: None
Special study on current topics related to Information and Communication Technology

IT5499 Extended Information Technology Training 6(0-40-0)
Prerequisite: Senior standing or consent of Head of School
Extensive on-the-job training of at least 16 weeks at a selected organization that provides information technology services - an individual comprehensive research or practical project related to the training must be conducted under close supervision of faculty members and supervisors assigned by the training organization. At the end of the training, the student must submit a report of the project and also give a presentation.

MAS116 Mathematics I 3(3-0-6)
Prerequisite: None
Mathematical induction; functions; limits; continuity; differential calculus - derivatives of functions, higher order derivatives, extrema, applications of derivatives, indeterminate forms; integral calculus - integrals of functions, techniques of integration, numerical integration, improper integrals; introduction to differential equations and their applications; sequence and series - Taylor's expansion, infinite sums.

MAS117 Mathematics II 3(3-0-6)
Prerequisite: Have earned credits of MAS116 or consent of Head of School
Analytic geometry and calculus - polar and curvilinear coordinates; three-dimensional space - vectors, lines, planes, and surfaces in three-dimensional space; function of several variables; calculus of real-valued functions of several variables and its applications - partial derivatives, extremes of functions, functions of higher derivatives, Lagrange multipliers; topics in vector calculus - line and surface integrals, Green's theorem.

MAS210 Mathematics III 3(3-0-6)
Prerequisite: Have earned credits of MAS117 or consent of Head of School
Linear algebra - vector spaces, linear transformation, matrices, determinants, systems of linear equations, Gaussian elimination, eigenvalue problems, eigenvectors, diagonalization, complex matrices; introduction to complex analysis - complex numbers, analytic functions, complex integration, conformal mapping; calculus of variations; introduction to tensor analysis - Cartesian tensors and their algebra.

MAS215 Differential Equations 3(3-0-6)
Prerequisite: Have earned credits of MAS117 or consent of Head of School
Ordinary differential equations of the first order; linear ordinary differential equations of higher order - matrix notation, homogeneous solutions, method of variation of parameters; general ordinary differential equations - series solutions, Bessel functions, Laplace transformation; Fourier analysis - Fourier series, integrals and transforms; partial differential equations - methods of separating variables, applications of Laplace and Fourier transforms; applications to initial-value and boundary - value problems.

MES211 Thermofluids 3(3-0-6)
Prerequisite: Have earned credits of (SCS138 or GTS121) or consent of Head of School

MES231 Engineering Mechanics 3(3-0-6)
(For non-mechanical engineering students)
Prerequisite: Have earned credits of SCS138 or consent of Head of School
Force systems; resultants; equilibrium; trusses; frames and machines; internal force diagrams; mass and geometric properties of objects; fluid statics; kinematics and kinetics of particles and rigid bodies; Newton's second law of motion.

MES300 Engineering Drawing 3(2-3-4)
Prerequisite: None
Introduction to basic principle of engineering drawing including lettering, applied geometry, orthographic drawing and sketching, sectional views and conventions, detail drawing, assembly drawing, dimensioning, three dimensioning, basic descriptive geometry dealing with points, lines & planes and their relationships in space and basic developed views. Introduction to Computer Graphics.

MES302 Introduction to Computer Aided Design 2(1-3-2)
Prerequisite: Have earned credits of MES300 or consent of Head of School
Use of industrial Computer Aided Design Software for detail design and drafting in various engineering fields such as in mechanical, civil, and electrical engineering. Introduction to three-dimensional wireframe, surfacing and solid modeling using CAD tools.
MES303 Mechanical Engineering Training
Prerequisite: Junior standing or consent of Head of School
Students are required to obtain practical training in the field of mechanical engineering at selected private sectors or governmental departments for not less than 240 hours during summer vacation of the third year. The objective is to allow the students to have opportunities to experience actual working conditions other than what is learned in the classrooms and laboratories. Students must submit a report at the end of the training period. A Satisfactory (S) or Unsatisfactory (U) grade will be given based on student’s performance, quality of the report and supervisor’s comments.

MES310 Thermodynamics (3-0-6)
(For non-mechanical engineering students)
Prerequisite: None

MES311 Thermodynamics (3-0-6)
Prerequisite: None

MES312 Combustion and Emission Control (3-0-6)
Prerequisite: Have earned credits of MES311 or equivalent or consent of Head of School

MES313 Internal Combustion Engines (3-0-6)
Prerequisite: Have earned credits of (MES310 or MES311) or Consent of Head of School
Internal combustion engine fundamentals, spark-ignition and compression-ignition engines, fuels and combustion, ignition systems, ideal fuel air cycle, supercharging and scavenging performance and testing, lubrication.

MES321 Heat Transfer (3-0-6)
Prerequisite: Have earned credits of (MES211 or MES310 or MES311) or consent of Head of School

MES331 Solid Mechanics I (3-0-6)
Prerequisite: Have earned credits of SCS138 or consent of Head of School

MES332 Solid Mechanics II (3-0-6)
Prerequisite: Have earned credits of MES331 or consent of Head of School

MES333 Design of Machine Elements (3-0-6)
Prerequisite: Have earned credits of MES331 or consent of Head of School
Theories of failure for static and dynamic loading. Design of mechanical components such as rotating shafts, bearing, welding, screw, springs and power transmission devices. Introduction to the use of computer as a tool in problem solving of mechanical design.

MES341 Fluid Dynamics (3-0-6)
Prerequisite: Have earned credits of SCS138 or consent of Head of School

MES342 Refrigeration and Air Conditioning (3-0-6)
Prerequisite: Have earned credits of ((MES310 or MES311) and (MES211 or MES341)) or consent of Head of School

MES350 Engineering Statics (3-0-6)
Prerequisite: Have earned credits of SCS138 or consent of Head of School
Method of solving engineering problem using fundamental principles of mechanics, resultant and resolution of forces and couples, equilibrium of particles, rigid bodies and
various structures, concept of friction, centroid, mass center and center of gravity, moment of inertia of area and mass, virtual work.

MES351 Engineering Dynamics  3(3-0-6)
Corequisite: Taking SCS138 in the same semester or consent of Head of School
Dynamics of particles: velocity, acceleration, force, momentum, laws of motion, work, power, energy, impulse, impact of elastic bodies, projectiles, circular motion. Dynamics of rigid bodies: moment of inertia and radius of gyration of various rigid bodies, rigid-body motion, force and acceleration, work and energy, impulse and momentum.

MES352 Mechanics of Machinery  3(3-0-6)
Prerequisite: Have earned credits of MES351 or consent of Head of School
Kinematics and dynamics of machines; displacement velocity, acceleration, and force analysis of linkage, cams and gear systems. Balancing of rotating and reciprocating machine parts; gyroscopic effects, critical speeds; energy variation in machinery. Mechanism design.

MES371 Material Science for Engineers  3(3-0-6)
Prerequisite: None
The course discusses properties and structure of material including metals, alloys, ceramics, polymers, wood, concrete, composites, and solid-state materials. Study of microstructures in relationship with mechanical properties of materials and phase equilibrium diagrams. Effects of production processes on microstructure of materials, degradation and failure analysis.

MES381 Measurements and Instrumentation  3(3-0-6)
Prerequisite: Have earned credits of (MES310 or MES311) or consent of Head of School

MES382 Vibration and Noise Control  3(3-0-6)
Prerequisite: Have earned credits of MES351 or consent of Head of School
Vibration: linear system equation, free and forced responses, systems with two degrees of freedom. Behaviour of sound waves. Sources of environment noise and vibration and their impacts. Instrumental and practical measurement. General physiological and subjective responses to noise and vibration. Regulations, criteria, methods and techniques to reduce and control environmental noise and vibration.

MES383 Hydraulic and Pneumatic Control  3(3-0-6)
Prerequisite: Have earned credits of MES341 or consent of Head of School
Static and dynamic modeling of hydraulic and pneumatic components and systems. Energy and power transfer and impedance matching concepts. Dynamic performance and stability of open and closed-loop servodrives. Introduction to hydraulic and pneumatic control system design.

MES390 Basic Mechanical Engineering Laboratory  1(0-3-0)
(For non-mechanical engineering students)
Prerequisite: Have earned credits of (MES211 or MES310 or MES311) or consent of Head of School
A service course for students with major outside mechanical engineering. Experimental practices cover fluid mechanics, heat transfer, thermodynamics, combustion and emission, mechanism, physical and mechanical properties of materials. Technical notes on the experimental tests have to be submitted for grading.

MES391 Mechanical Engineering Laboratory I  2(1-3-2)
Prerequisite: Have earned credits of (MES310 or MES311) or consent of Head of School
Students are required to conduct tests and experiments on physical and mechanical properties of materials, mechanisms, fluid mechanics, thermodynamics and heat transfer, combustion and internal combustion engines. Reports or technical notes on the tests and experiments have to be submitted for grading.

MES392 Mechanical Engineering Laboratory II  2(1-3-2)
Prerequisite: Have earned credits of (MES310 or MES311) or consent of Head of School
Students are required to conduct tests and experiments on physical and mechanical properties of materials, mechanisms, fluid mechanics, thermodynamics and heat transfer, combustion and internal combustion engines. Reports or technical notes on the tests and experiments have to be submitted for grading.

MES403 Mechanical Engineering Project I  1(0-2-1)
Prerequisite: Senior standing or consent of Head of School
Students are required to present seminars on current development of mechanical engineering to their classmates and faculty members. The seminars may lead to senior projects later on. The reports of the seminars have to be submitted for grading.

MES405 Special Studies in Mechanical Engineering I  3(3-0-6)
(For Foreign Exchange Track)
Prerequisite: Consent of Head of School
This course is intended for students who wish to participate in the exchange program. It is designed for topics related to mechanical engineering, but not presently offered as either a required or technical elective.
**MES406 Special Studies in Mechanical Engineering II**  
(For Foreign Exchange Track)  
Prerequisite: Consent of Head of School  
This course is intended for students who wish to participate in the Exchange Track. It is designed for topics related to mechanical engineering, but not presently offered as either a required or technical elective.

**MES407 Mechanical Engineering Project II**  
(For Senior Project Track)  
Prerequisite: Senior standing or consent of Head of School  
A final course involving individual or group projects including design, analysis and implementation of mechanical systems selected from various interesting areas within mechanical engineering. Students are required to propose their projects during the first semester of their senior year. After a project is completed, students are responsible for submitting their final report and giving a presentation.

**MES408 Extended Mechanical Engineering Training**  
(For Extended Training Track)  
Prerequisite: None  
Students are provided with extensive on-the-job training at selected modern mechanical engineering facilities. The purpose of the course is to allow the students opportunities, to work and intensively conduct an individual research or practical project for at least 17 weeks under the close supervision of faculty members and main supervisors assigned by the training company. After the project is completed, students are responsible for submitting their final report and giving a presentation.

**MES413 Advanced Thermodynamics**  
Prerequisite: Have earned credits of (MES211 or MES311) or consent of Head of School  
Review on basic concepts and definitions, the first-law and energy, the second law and entropy. Thermo-mechanical availability and irreversibility. Availability equation for a control mass and applications. Energy and mass equations for a control volume and applications. Second law efficiencies for control mass and control volume applications. Chemical availability. Energy analysis of engineering cycles. Thermoeconomics.

**MES422 Thermal System Design**  
Prerequisite: Have earned credits of (MES321 and MES341) or consent of Head of School  
Design procedure. Comparison between a workable system and optimum system. Equation fitting for equipment and processes characterization. Modeling of equipment and processes based on physical laws. Simulation of thermal systems. Selected optimization techniques such as Lagrange multiplier, search methods, linear programming, etc.

**MES434 Mechanical System Design**  
Prerequisite: Have earned credits of MES333 or consent of Head of School  
Mechanical engineering system design involving practical problems in various industries. Students, working in groups, will investigate the design methodology and process from concept through final design including detailed analysis of all mechanical components of the system, by which knowledge of all engineering disciplines, is required. Projects are proposed from various areas of study within mechanical engineering. Students submit a final report and present their projects at the end of semester.

**MES444 Renewable Energy Resources**  
Prerequisite: None  
Global and regional resources, conversion technologies and economics of renewable energy such as hydropower, biomass energy, solar energy, wind energy and geothermal energy.

**MES462 Turbomachinery**  
Prerequisite: Have earned credits of ((MES310 or MES311) and MES341)) or consent of Head of School  

**MES471 Electrical Energy Management**  
Prerequisite: Senior or junior standing or consent of Head of School  

**MES473 Energy Economics**  
Prerequisite: None  

**MES474 Thermal Energy Management**  
Prerequisite: Senior or junior standing or consent of Head of School  
Efficient uses of thermal equipment and systems such as boilers and steam equipment, evaporator and condenser, pre-heater and economiser, dryers and drying systems, etc.
MES481 Power Plant Engineering 3(3-0-6)
Prerequisite: None
Energy conversion principles and availability concept, fuels and combustion analysis and component study of gas turbine and internal combustion engine power plants, combined cycle and cogeneration, hydro power plant, nuclear power plant, control and instrumentation, power plant economics, and environmental impacts.

MES482 Power Generation and Environment 3(3-0-6)
Prerequisite: None
Thermal power plants: steam turbine, gas turbine, and cogeneration, hydropower plants, nuclear safety and waste treatment, atmospheric, land and water environment for power plants, introduction to environment impact assessment for power plants.

MES483 Dynamic Systems and Control 3(3-0-6)
Prerequisite: Have earned credits of MES351 or Consent of Head of School
Mathematical modeling of mechanical, electrical, pneumatic, hydraulic, and combined physical systems using a unified approach, such as the Bond graph technique. Introduction to state-variables, system response, stability using Laplace transform technique. System characteristics: controllability and observability. Open and closed loop responses of control systems. Solution to state equation by direct analysis and digital computer methods.

MES493 Extended Mechanical Engineering Laboratories 3(1-6-2)
Prerequisite: Have earned credits of (MES391 and MES392) or consent of Head of School
Students are required to conduct extended tests and experiments on thermo-fluid systems such as fluid machinery systems, gas turbines, refrigeration and air conditioning systems, etc. Component modeling and system simulation are expected in the reports submitted for grading.

MES494 Special Topic in Mechanical Engineering I 3(3-0-6)
Prerequisite: None
New topics or areas of study not offered in other mechanical engineering courses. Topics may vary from semester to semester and will not be the same as the one offered in Special Topic II, MES495.

MES495 Special Topic in Mechanical Engineering II 3(3-0-6)
Prerequisite: None
New topics or areas of study not offered in other mechanical engineering courses. Topics may vary from semester to semester and will not be the same as the one offered in Special Topic I, MES494.

MTS211 Principles of Business 3(3-0-6)
Prerequisite: None
This subject provides a broad overview of the world of business preparing students for various business-related subjects. It offers a comprehensive introduction of every aspect of business and the environment in which business operates. Emphasis is placed upon business organizations in general, including the objectives and overall responsibilities of business enterprises within their social and economic context. The fundamentals of business which span the range of all functional areas-management, accounting, marketing, operations, information systems, finance, and legal studies will be introduced. Students will learn the language of the business world and the legal forms of business. Additionally, topics in small business and entrepreneurship will also be covered.

MTS212 Principles of Management 3(3-0-6)
Prerequisite: None
A study of organization and management trails, evolution of thoughts and theory of management. Management functions, which are planning, organizing, directing, and controlling, are emphasized for human factors in organization and management ethics.

MTS231 Statistical Methods for Managers 3(3-0-6)
Prerequisite: Have earned credits of (GTS111 or MAS117) or consent of Head of School
This course introduces fundamentals of probability and statistic: descriptive statistics, probability, discrete random variables and probability distributions, continuous random variables and probability distributions, point estimation, interval estimation, tests of hypotheses, analysis of variance, and regression analysis.

MTS232 Production and Operations Management 3(3-0-6)
Prerequisite: None
This course is intended to present various functions in modern manufacturing and service organizations that are important to their business operations. These functions include defining operations strategy, decision analysis, designing the operating system, facility design, project management, supply-chain management, forecasting, capacity and aggregate planning, inventory management, scheduling, and quality management.

MTS233 Introduction to Supply Chain Management 3(3-0-6)
Prerequisite: None
This course introduces the general principle of domestic and international supply chain systems. Major topics include introduction to logistics, transportation, production planning, inventory control, purchasing and procurement, packaging, supply chain integration, and information technology for supply chain management.
MTS234 Basic Electrical Engineering for Technologist 3(2-2-5)
Prerequisite: None
The course covers electrical engineering principles and technology as well as laboratory practices and experimental studies. Topics included are basic circuit theory, DC and AC circuit analysis, Kirchoff’s law, Thevenin theorem, DC and AC measurements, electronic devices and circuits.

MTS251 Economics for Business and Management 3(3-0-6)
Prerequisite: Have earned credits of EC210 or consent of Head of School
An overview of the modern market economy as a system for dealing with the problem of scarcity; Operation and decision-making of economic units; Concepts of supply, demand, and resource allocation; analysis of various market structures; economic policy.

MTS252 Materials Science 3(3-0-6)
Prerequisite: None
The course introduces a wide range of industrial materials, under the two main categories of structural and functional materials. Traditional and engineered structural materials discussed include metallic alloys, ceramics, polymers and composites. For the functional materials, semiconductors, superconductors, magnetic materials, and smart materials will be presented. Finally, failure and properties degradation are discussed.

MTS254 Introduction to Management Science 3(3-0-6)
Prerequisite: Have earned credits of GTS111 or consent of Head of School
This course discusses the application of quantitative methods in solving management problems. Topics discussed include linear programming modeling, graphical method for solving linear programming problems, graphical methods for sensitivity analysis, assignment problems, network models, integer linear programming, goal programming, analytic hierarchy process, decision analysis, project management, simulation, and forecasting models.

MTS301 Management Technology Training 0(0-0-0)
Prerequisite: Junior standing or consent of Head of School
Students are provided with on-the-job training at selected industrial or service organizations. The purpose of this course are to allow the students opportunities to learn through hands-on experience how various modern technologies can be applied to manage facilities and systems. Moreover, students will learn how to collaborate with co-workers, coordinate project activities, and develop self-responsibility. The training period must not less than 240 hours. Students must submit a written report at the end of the training period. Satisfactory (S) or unsatisfactory (U) grade will be given based on the student’s performance, the quality of the report, and the supervisor’s comments.

MTS302 Extended Management Technology Training 6(0-40-0)
Prerequisite: Senior standing or consent of Head of School
This extended management technology training provides students with intensive on-the-job training at selected industrial or service organizations. The training period must not be less than 480 working hours. This intensive training will enable students to work with company personnel to solve real problems, not simulated ones. Students will gain hands-on experience on how various modern technologies are applied to manage facilities and systems. Moreover, they will learn how to collaborate with colleagues, coordinate project activities, and develop self-responsibility. In addition to a designated supervisor at the company, a faculty member will be assigned to co-supervise the student’s training program. An approved industrial project is expected to be carried out by the student. At the end of the training period, the student must give an oral presentation of his/her work and submit a written report of the assigned project to the company and the MT Program.

MTS304 Extended Engineering Management Training 6(0-40-0)
Prerequisite: Senior standing or consent of Head of School
The extended engineering management training provides students with intensive on-the-job training at selected industrial or service organizations. The training period must not be less than 480 working hours. This intensive training will enable students to work with company personnel to solve real problems, not simulated ones. Students will gain hands-on experience on how various modern technologies are applied to manage facilities and systems. Moreover, they will learn how to collaborate with colleagues, coordinate project activities, and develop self-responsibility. In addition to a designated supervisor at the company, a faculty member will be assigned to co-supervise the student’s training program. An approved industrial project is expected to be carried out by the student. At the end of the training period, the student must give an oral presentation of his/her work and submit a written report to the assigned project to the company and the EM Program.

MTS309 Engineering Management Training 0(0-0-0)
Prerequisite: Junior Standing or consent of Head of School
Students are provided with on-the-job training at selected industrial or service organizations. The purpose of this course is to allow the students opportunities to learn through hands-on experience how various modern technologies can be applied to manage facilities and systems. Moreover, students will learn how to collaborate with co-workers, coordinate project activities, and develop self-responsibility. The training period must not less than 240 hours. Students must submit a written report at the end of the training period. Satisfactory (S) or unsatisfactory (U) grade will be given based on the student’s performance, the quality of the report, and the supervisor’s comments.
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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>MTS311</td>
<td>Fundamental Financial Accounting</td>
<td>3(3-0-6)</td>
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<td>A study of the evolution of accounting; the functions</td>
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<td>financial transactions; characteristics of various types</td>
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<td>measuring these financial transactions; a preparation</td>
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<td>MTS312</td>
<td>Principles of Marketing</td>
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<td>MTS313</td>
<td>Organizational Behavior</td>
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<td>MTS212 or consent of Head of School</td>
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<td>an emphasis on their application to management of</td>
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<td></td>
<td>organizations. The subject purposes to explore specific</td>
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<td></td>
<td>subject areas: group processes, decision making,</td>
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<td></td>
<td>motivation, leadership, organizational culture, power</td>
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<td></td>
<td>and politics, conflict and negotiation, and</td>
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<td></td>
<td>communication, as well as other relevant and</td>
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<td></td>
<td>important issues facing organizations today. It will</td>
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<td></td>
<td>teach tomorrow’s managers to develop, train, and</td>
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<td></td>
<td>motivate high-performance employees.</td>
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<td>MTS314</td>
<td>International Trade and Business</td>
<td>3(3-0-6)</td>
<td>Have earned</td>
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<td></td>
<td>Prerequisite: Have earned credits of MTS211 or</td>
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<td>credits of</td>
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<td></td>
<td>consent of Head of School</td>
<td></td>
<td>(MTS211) or</td>
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<td></td>
<td>The course includes international and globalization</td>
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<td>consent of Head</td>
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<td></td>
<td>of business; global trade; global trade theories;</td>
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<td>of School</td>
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<td></td>
<td>global business environment (cultural, political,</td>
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<td></td>
<td>social, etc.), international competitiveness,</td>
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<td></td>
<td>international operations, international marketing,</td>
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<td>international financial management, expatriate</td>
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<td>managers, global strategic planning, strategy</td>
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<td>adaptations (marketing, human resources, etc.).</td>
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<td>MTS331</td>
<td>Economic Decision Analysis</td>
<td>3(3-0-6)</td>
<td>None</td>
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<tr>
<td></td>
<td>This course provides fundamental concepts and tools</td>
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<td></td>
<td>for economic decision-making for business projects.</td>
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<td></td>
<td>The topics include money–time relationship and</td>
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<td></td>
<td>equivalence, cash flow analysis, minimum attractive</td>
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<td></td>
<td>rate of return (MARR) of an investment, several</td>
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<td>methods for investment appraisal such as present</td>
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<td>worth analysis (PW), annual worth analysis (AW),</td>
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<td></td>
<td>internal and external rate of return analysis (IRR and</td>
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<tr>
<td></td>
<td>ERR), benefit and cost ratio (B/C), etc., effect of</td>
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<td></td>
<td>inflation, depreciation techniques, impact of</td>
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<td></td>
<td>depreciation and tax on decision analysis, sensitivity</td>
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<td></td>
<td>analysis and risk analysis for investment alternatives.</td>
<td></td>
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<td>MTS332</td>
<td>Quality Management</td>
<td>3(3-0-6)</td>
<td>Have earned</td>
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<td></td>
<td>Prerequisite: Have earned credits of MTS231 or</td>
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<td>credits of</td>
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<td></td>
<td>consent of Head of School</td>
<td></td>
<td>(MTS231) or</td>
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<td></td>
<td>This course focuses on quality control and</td>
<td></td>
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<td></td>
<td>management in both manufacturing and service</td>
<td></td>
<td>of School</td>
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<td></td>
<td>environments. The topics cover statistical process</td>
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<td></td>
<td>control (SPC) concepts and practices in several types</td>
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<td></td>
<td>of control charts and sampling plans, including</td>
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<td>analytical tools such as check sheet, Pareto chart,</td>
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<td>cause-and-effect diagram, etc., management,</td>
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<td></td>
<td>quality and productivity relationship, concepts of</td>
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<td>quality assurance and total quality management</td>
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<td>(TQM).</td>
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<td>MTS333</td>
<td>Production and Inventory Management</td>
<td>3(3-0-6)</td>
<td>Have earned</td>
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<td></td>
<td>Prerequisite: Have earned credits of GTS212 or MAS116</td>
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<td>credits of</td>
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<td>or consent of Head of School</td>
<td></td>
<td>(GTS212 or</td>
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<td></td>
<td>The focus of this course is to point out the</td>
<td></td>
<td>MAS116) or</td>
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<td></td>
<td>relationship between inventory and production in</td>
<td></td>
<td>consent of Head</td>
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<td></td>
<td>management aspect. Various qualitative and quantitative</td>
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<td>of School</td>
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<td></td>
<td>topics for production and inventory management for</td>
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<td></td>
<td>both dependent and independent demands are discussed,</td>
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<td>such as economic order quantity (EOQ), economic lot</td>
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<td>sizing (EPS), just in time (JIT), materials</td>
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<td>requirement planning (MRP), manufacturing resources</td>
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<td>planning (MRP II), enterprise resources planning</td>
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<td></td>
<td>(ERP), production planning, and</td>
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<td></td>
<td>capacity planning.</td>
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<td>MTS334</td>
<td>Applications of Business Statistics</td>
<td>3(3-0-6)</td>
<td>Have earned</td>
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<td>Prerequisite: Have earned credits of MTS231 or</td>
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<td></td>
<td>consent of Head of School</td>
<td></td>
<td>(MTS231) or</td>
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<td></td>
<td>This course emphasizes on applications of statistical</td>
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<td></td>
<td>analysis techniques. Topics discussed include a</td>
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<td>of School</td>
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<td>review of hypothesis testing, analysis of variance,</td>
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<td>regression analysis, and other fundamental methods of</td>
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<td>statistics. The applications of business statistical</td>
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<td>tools will be covered.</td>
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<td>MTS335</td>
<td>Enterprise Planning and Control Systems</td>
<td>3(3-0-6)</td>
<td>None</td>
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<td>Prerequisite: None</td>
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<td></td>
<td>The design, analysis and implementation of enterprise-</td>
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<td></td>
<td>wide resource planning and control systems; demand</td>
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<td></td>
<td>forecasting, aggregate planning, decision support</td>
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<td></td>
<td>models for production planning, master scheduling,</td>
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<td></td>
<td>shop floor control; application of information</td>
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<td>technologies such as ERP and MRP II to operations</td>
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<td></td>
<td>planning and control.</td>
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<td>MTS336</td>
<td>Operations Scheduling</td>
<td>3(3-0-6)</td>
<td>None</td>
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<td></td>
<td>Prerequisite: None</td>
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<td></td>
<td>This course emphasizes models for sequencing and</td>
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<td>scheduling activities including: static and dynamic</td>
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<td>problems; deterministic and stochastic models, single</td>
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<td>machine processing; parallel machine</td>
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<td></td>
<td>processing; flow-shop and job-shop scheduling,</td>
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<td>project scheduling, workforce scheduling, exact and</td>
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<td>heuristic solution methods, and applications in</td>
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<td>manufacturing environments.</td>
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MTS337 Transportation and Logistics Management 3(3-0-6)
Prerequisite: None
This class will provide the theories, tools, techniques and technologies to manage the transportation and logistics system and how the transportation and other supply chain drivers such as inventory and facility work together to improve supply chain and logistic system profit. The topics included are: introduction to logistics management, supply chain drivers, roles of logistics in supply chain, transportation modes (motor, railroad, air, water, and intermodal modes), inventory models with transportation choices, global transportation, designing of distribution network, information technology in transportation, logistic strategies and other advanced topics in logistics and supply chain management.

MTS338 Warehouse Operations Management 3(3-0-6)
Prerequisite: None
Fundamental operations in warehouse management including roles of warehousing, warehouse technology such as bar codes, radio frequency identification (RFID) for inventory control system, modern warehouse operations, classifying products, materials handling equipments and system, racking and shelving, the aisle width decision, information technology for warehouse operations, health and safety issues.

MTS339 Purchasing and Supply Management 3(3-0-6)
Prerequisite: None
An overview of the procurement and purchasing activities in a supply chain are discussed. Discussion topics include supplier evaluation and selection, pricing, negotiation, contracts, inventory management, quality, buying decisions and plans, cost analysis, purchase agreements, and purchasing analysis of capital equipment, services, institutional and government purchases.

MTS340 Introduction to Inventory Management 3(3-0-6)
Prerequisite: None
Introduction of inventory management, types of inventory, inventory problem classifications; inventory cost; independent demand systems; deterministic and probabilistic models; single order quantities, dependent demand systems, material requirement planning (MRP), just-in-time (JIT), inventory valuation.

MTS351 Management Systems Optimization 3(3-0-6)
Prerequisite: Have earned credits of ((GTS112 or MAS210), MTS231 and MTS254) or consent of Head of School
Basic operations research models and their applications are introduced. The course covers topics on linear programming, simplex method, duality and sensitivity analysis, transportation model, nonlinear programming, deterministic dynamic programming, deterministic inventory models, game theory, probabilistic dynamic programming, probabilistic inventory models, queuing models, and Markovian decision processes.

MTS381 Business Information 3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Topics included are strategic uses of information systems; information systems in business functions; computer hardware and software; telecommunications and networks; electronic commerce; data and knowledge management; decision support systems; intelligent systems; and systems development.

MTS382 Database Systems and Applications 3(3-0-6)
Prerequisite: Have earned credits of ITS101 or consent of Head of School
Logical data models, relational database systems, structured query language (SQL), conceptual modeling; database design, Web-connected databases, transaction management, data warehousing, data mining, database administration issues, focuses on the use/management of business data in areas such as finance, accounting, production, and etc.

MTS383 E-Business 3(3-0-6)
Prerequisite: Have earned credits of ITS101 or consent of Head of School
This course offers the learning that is needed to develop electronic business. Topics include: developing a strategy; business-to-consumer (B2C) and business-to-business (B2B) marketing; pricing; customer relationship management (CRM); supply chain management; bar codes and radio frequency identification (RFID) for inventory management system; planning, developing, and maintaining Web sites and supporting information systems; business processes; online payments; international, legal, privacy, and security issues. A unique feature is an ongoing project within the course that provides an opportunity to develop electronic commerce implementation plans.

MTS384 Information Systems Software 3(3-0-6)
Prerequisite: None
Students will learn how to use selected up-to-date information systems software programs and apply them to help to manage primary functions of a business organization. A review of core business operations is also provided prior to the learning of software applications.

MTS386 Distributed and Collaborative Computing 3(3-0-6)
Prerequisite: None
Distributed computing concept. Social networks and their applications. Tools for collaborative computing, such as Google Documents, Google Site, and Blogger. Introduction

MTS387 Business Data Communications and Networking
Prerequisite: Have earned credits of MTS386 or consent of Head of School

MTS388 Business Information Systems Analysis
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Systems development life cycle, project planning, investigation, requirements definition, systems specifications, alternative selection. Tools and techniques of object-oriented development and structured development.

MTS389 Application Programming for Technologists
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Introduction to business programming, programming processes, programming environments, object-oriented and event-oriented models, and database programming.

MTS391 Special Topics in Management Technology
Prerequisite: None
This course is designed for topics related to Management Technology, but not presently offered as either a required or technical elective.

MTS392 Current Topics in Management Technology I
Prerequisite: None
This course is designed for current topics related to Management Technology, but not presently offered as either required or elective courses.

MTS393 Current Topics in Management Technology II
Prerequisite: None
This course is designed for current topics related to Management Technology, but not presently offered as either required or elective courses. Topics covered are different from MTS392.

MTS394 Introduction to Research Methodology in Management Technology
Prerequisite: Have earned credits of MTS231 or consent of Head of School
This course gives a comprehensive introduction to the subject of research methods in management technology. The topics include introduction to Research Methodology, Basic Terminology, Ethical Considerations in Research, Problem Definition, Literature Review, Research Proposal, Collecting primary data, Sampling and Fieldwork, Tools and Techniques for Analyzing Research Data, Communicating Research Findings. Students will have hands-on experience in conducting a research.

MTS403 Management Technology Seminar
Prerequisite: Senior standing or consent of Head of School
Each student group will be assigned a real-world or research-like problem as its seminar topic. Under supervision and guidance of a faculty member, the group must conduct a thorough literature review and collect published articles relevant to the assigned topic. They must develop a project proposal which will consist of the project scope, objectives, feasible approach, project activities, Gantt chart, and expected results and their contributions. The group must submit the proposal to the project advisor and give a public seminar on the assigned topic at the end of the semester.

MTS404 Engineering Management Project
Prerequisite: Have earned credits of MTS403 or consent of Head of School
A continuation of MTS403. An individual student or a team of students will work on the senior project. The projects can be intensively conducted in industry or within the institute. After a project is completed, students are responsible for submitting their final report and giving a presentation.

MTS404 Management Technology Project
Prerequisite: Have earned credits of MTS403 or consent of Head of School
A continuation of MTS403. An individual student or a team of students will work on the senior project. The projects can be intensively conducted in industry or within the institute. After a project is completed, students are responsible for submitting their final report and giving a presentation.

MTS411 Management Accounting
Prerequisite: Have earned credits of MTS311 or consent of Head of School
An introductory course in cost accounting for corporate planning and management decisions. The course will focus on concepts and models for improving efficiency and promoting effectiveness through budgetary control, standard costing, and other management accounting tools for decision-making.

MTS412 Business Finance
Prerequisite: Have earned credits of MTS311 or consent of Head of School
A study of the roles, functions and objectives of financial management, various types of business organizations and tax involved. Discussions will also cover financial analysis, basic principles in financial management in both allocation and acquisition of funds.
MTS413 Human Resources Management 3(3-0-6)
Prerequisite: Have earned credits of (MTS211 and MTS212) or consent of Head of School

This course covers the principles of human resource management, concepts, and practices, as well as the roles and responsibilities of a human resource manager, emphasizing the importance and usage of HRM as a strategic partner of the organization in today’s world. The subject purpose is to examine the breadth of activity essential for effective people resourcing within an organization. It addresses the range of activities associated with the acquisition, management, and release of staff. Specific topics include employee recruitment, selection, orientation, training and development, retention, performance management, rewards and compensation, benefits, counseling, employment legislation, safety and health issues, labor relations, and multinational human resources.

MTS415 Strategic Management 3(3-0-6)
Prerequisite: Have earned credits of MTS212 or consent of Head of School

This course focuses on the role of top management in integrating an organization’s internal functional activities and external environmental forces. Emphasis is placed on defining economic, technological, ethical, political, and social factors affecting an organization and their consideration in setting goal and strategies. The topics considered in the course will be the relationships of organizations to their environments, the hierarchy of organizational objectives, structured and informal approaches to strategic planning, the integration of business functions, organizational structure, and policy implementation and evaluation. A significant aspect of the course is devoted to assessing the competitive dynamics of firms.

MTS431 Facility Location and Layout Planning 3(3-0-6)
Prerequisite: Have earned credits of (MTS232 and MTS351) or consent of Head of School

This course introduces quantitative techniques, both heuristic and optimization, for selecting a suitable site for facility location based on qualitative and quantitative factors. Requirements, such as production process, flow of materials, activity relationships, and personnel that affect facility layout, are discussed. The application of systematic layout planning will be explained in detail. Other topics such as warehouse operations, loading docks, material handling, and facility maintenance are also discussed.

MTS433 Analysis Techniques for Complex Supply Chain Management Problems 3(3-0-6)
Prerequisite: None

This course deals with real-world complex supply chain management (SCM) problems from both the individual and integrated viewpoints of the SCM components. Well-known heuristic and meta-heuristic techniques such as greedy heuristics, genetic algorithms (GA), simulated annealing (SA), ant colony optimization (ACO), etc., will be introduced. Selected SCM problems will be illustrated and their solution approaches will be explained.

MTS451 Project Management 3(3-0-6)
Prerequisite: None

This course introduces concepts of project management and techniques for planning, utilizing, and controlling of resources to accomplish specific goals. While the focus is on technically-oriented projects, the principles discussed are applicable to the management of any project. Topics include estimation of project duration, time-cost consideration, workforce allocation, cash flow forecasting, financial and performance control, and documentation.

MTS455 Business Process Management 3(3-0-6)
Prerequisite: None

The study of the application of computer simulation software to business decision making problems, statistics problems, discrete-event simulation approaches, simulated data analysis, simulation variance reduction techniques.

MTS481 Business Process Simulation 3(3-0-6)
Prerequisite: Have earned credits of MTS231 or consent of Head of School

This course focuses on the use and application of Information systems to support the decision-making process with a focus on the application of information technology to the solution of management problems. Students will learn the basic concepts of decision support systems. This will involve developing conceptual knowledge of these systems as well as gaining practical experience, such as building and implementing a decision support system with software package, what-if analysis, and the use of the optimization software. Heavy emphasis is placed on using decision support systems for business decisions. Business application development techniques are applied to aid in the development of complex decision support systems.

MTS482 Principles of Decision Support Systems 3(3-0-6)
Prerequisite: Have earned credits of MTS381 or consent of Head of School

This course focuses on the use and application of Information systems to support the decision-making process with a focus on the application of information technology to the solution of management problems. Students will learn the basic concepts of decision support systems. This will involve developing conceptual knowledge of these systems as well as gaining practical experience, such as building and implementing a decision support system with software package, what-if analysis, and the use of the optimization software. Heavy emphasis is placed on using decision support systems for business decisions. Business application development techniques are applied to aid in the development of complex decision support systems.

MTS483 Information Systems Implementation 3(3-0-6)
Prerequisite: Have earned credits of MTS388 or consent of Head of School

Logical and physical design of computer-based information systems; tools and techniques that underlie the design processes. Design of an enterprise information system with CASE tools. Alternative approaches to systems design with emphasis on object-oriented systems.
MTS484 Intelligent Systems for Business 3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Introduction to business application of Intelligent Systems, case-based systems, rule-based systems, uncertainty management, fuzzy systems, neural networks, evolutionary computation, machine learning, data mining, and collective intelligence

MTS485 Business Intelligence Technologies and Applications 3(3-0-6)
Prerequisite: Have earned credits of ITS100 or consent of Head of School
Business intelligence technologies, tools, architectures, and methodologies for management support, decision-making and organizational performance analysis. Business intelligence applications used for strategic direction and competitive advantage.

MTS486 Introduction to Enterprise Resource Planning 3(3-0-6)
Prerequisite: None
Introduction to the integrated business planning and execution systems currently in use by most large and medium-sized organizations. The focus of this course is on fundamentals of enterprise resource planning (ERP) systems concepts, and the importance of integrated information systems in an organization. The implementation process of ERP will be discussed. The illustration of a small business firm with the functions of procurement, production, and sales business using commercial ERP software.

MTS491 Special Study in Management Technology I 3(3-0-6)
Prerequisite: Consent of Head of School
This course is intended for students who wish to participate in the exchange program. It covers new topics or areas of study related to management technology, but not presently offered in general basic courses, basic courses in Science and Mathematics, compulsory courses, and compulsory elective courses of the management technology curriculum. Topics covered must be different from MTS492.

MTS492 Special Study in Management Technology II 3(3-0-6)
Prerequisite: Consent of Head of School
This course is intended for students who wish to participate in the exchange program. It covers new topics or areas of study related to management technology, but not presently offered in general basic courses, basic courses in Science and Mathematics, compulsory courses, and compulsory elective courses of the management technology curriculum. Topics covered must be different from MTS491.

MTS493 Special Studies in Engineering Management I 3(3-0-6)
Prerequisite: Consent of Head of School
This course is intended for students who wish to participate in the exchange program. It covers new topics or areas of study related to engineering management, but not presently offered in general basic courses, basic courses in Science and Mathematics, compulsory courses, and compulsory elective courses of the engineering management curriculum. Topics covered must be different from MTS494.

MTS494 Special Studies in Engineering Management II 3(3-0-6)
Prerequisite: Consent of Head of School
This course is intended for students who wish to participate in the exchange program. It covers new topics or areas of study related to engineering management, but not presently offered in general basic courses, basic courses in Science and Mathematics, compulsory courses, and compulsory elective courses of the engineering management curriculum. Topics covered must be different from MTS493.

SCS126 Chemistry for Engineers 3(3-0-6)
Prerequisite: None
Properties of gases, liquids, solids; properties of solutions; chemical equilibrium; acids and bases; electrochemistry; organic chemistry and polymer; atomic structure and bonding.

SCS138 Applied Physics I 3(3-0-6)
Prerequisite: None
Mechanics of particles and rigid-body - statics of particles and rigid bodies, analysis of simple structures, friction, work, momentum, rotation, vibrations, and waves; mechanics of fluids - properties of fluids, pressure measurement, forces on plane and curved areas, buoyancy and stability of bodies, fluid flow concepts, heat, thermal properties, and modes of heat transfer.

SCS139 Applied Physics II 3(3-0-6)
Prerequisite: Have earned credits of SCS138 or consent of Head of School
Elements of electromagnetism - electric fields and magnetic fields, dielectrics and capacitors, magnetic induction and Faraday’s law of induction, inductors, electromagnetic theory and applications, AC circuits, fundamental electronics; optics - reflection, refraction, interference, diffraction, polarization, optical equipment, application of optics and LASER; modern physics.

SCS140 Pre-Mathematics and Sciences 3(3-0-6)
This course is designed for students who have insufficient background in mathematics, physics, and chemistry. Its objective is to improve basic knowledge of students to be able to study mathematics, physics, and chemistry effectively. Differential and Integral calculus, Trigonometric
functions, Logarithmic functions, Limits, chain rule, L'Hopital rule; Motion in three dimensions, Rotational motion, Angular momentum, Equilibrium of rigid bodies, Fluid mechanics, Harmonic oscillation; Thermodynamics, Chemical equilibrium, Atomic structure.

SCS176 Chemistry Laboratory 1(0-3-0)
Corequisite: Taking SCS126 in the same semester or consent of Head of School
This laboratory course is designed to not only provide hands-on experience to students taking SCS126, but also strengthen the understanding of the subjects taught in the course. Through a series of laboratory exercises, students will learn how to use selected apparatus essential for chemistry experiments and how to safely handle chemical substances.

SCS183 Physics Laboratory I 1(0-3-0)
Corequisite: Taking SCS138 in the same semester or consent of Head of School
A series of physics experiments is designed to demonstrate theories taught in SCS138. Students will have opportunities to use state-of-the-art apparatus in a modern laboratory to recapitulate fundamental concepts covered in the SCS138 course.

SCS184 Physics Laboratory II 1(0-3-0)
Corequisite: Taking SCS139 in the same semester or consent of Head of School
A series of physics experiments is designed to demonstrate theories taught in SCS139. Students will have opportunities to use state-of-the-art apparatus in a modern laboratory to recapitulate fundamental concepts covered in the SCS139 course.

TU100 Civic Education 3(3-0-6)
Prerequisite: None
Study of principles of democracy and government by rule of law. Students will gain understanding of the concept of “citizenship” in a democratic rule and will have opportunity for self-development to become a citizen in a democratic society and to take responsibility in addressing issues in their society through real-life practices.

TU110 Integrated Humanities 2(2-0-4)
Prerequisite: None
To study the history of human beings in different periods, reflecting their beliefs, ideas, intellectual and creative development. To instill analytical thinking, with an awareness of the problems that humanities are confronting, such as the impacts of: technological development, violence, wars, and various world crises so that we can live well in a changing world.

TU120 Integrated Social Sciences 2(2-0-4)
Prerequisite: None
This interdisciplinary course focuses on the fact that social sciences play an important role for society. The course explains the origins of the social sciences and the modern world, the separation of social sciences from pure sciences, and the acceptance of the scientific paradigm for the explanation of social phenomenon. It also involves the analysis of important disciplines, concepts, and major theories of social sciences by pointing out strengths and weaknesses of each one. Included is the analysis of contemporary social problems, using knowledge and various perspectives --individual, group, macro-social, national and world perspectives-- to view those problems.

TU130 Integrated Sciences and Technology 2(2-0-4)
Prerequisite: None
To study basic concepts in science, scientific theory, and philosophies. Standard methods for scientific investigations. Important evolutions of science and technology influencing human lives, as well as the impacts of science and technology on economies, societies and environments. Current issues involving the impacts of science and technology on moral, ethical, and human values.

TU140 Thai Studies 3(3-0-6)
Prerequisite: None
Evolution of Thai society-settlement, government, economy, social values, and way of life; factors that determine Thai society and culture; artistic and technological creativity; geography and natural resources; trends in social and cultural development.
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   Ph.D. in Heat Transfer, King's College London, UK
   Member of Thammasat University Council

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   Ph.D. in Chemistry, Université de Haute Alsace, France
   Department of Chemistry, Faculty of Science, Mahidol University

3. Professor Dr. Somchai Chucheepsakul  Member
   Ph.D. in Civil Engineering, University of Texas, USA
   Department of Civil Engineering, Faculty of Engineering,
   King Mongkut’s University of Technology Thonburi (KMUTT)

4. Professor Dr. Somchart Soponronnarit  Member
   Dr.Ing. in Production and Processing of Vegetable Raw Materials,
   Ecole Nationale Supérieure Agronomique de Toulouse, France
   School of Energy, Environment and Materials,
   King Mongkut’s University of Technology Thonburi (KMUTT)
   Fellow of the Royal Institute

5. Professor Dr. Uthai Tanlamai  Member
   Ph.D. in Business Administration,
   University of Illinois at Urbana Champaign, USA
   Department of Accountancy,
   Faculty of Commerce and Accountancy, Chulalongkorn University

6. Professor Dr. Wanlop Surakampontorn  Member
   Ph.D. in Electronics, University of Kent at Canterbury, Kent, UK

7. Professor Dr. Somnuk Tangtermsirikul  Secretary
   D.Eng. in Civil Engineering, University of Tokyo, Japan

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Advisor of the SIIT Academic Review and Rank Assessment Committee  Vice Rector for Academic Affairs, TU
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               Faculty of Law, TU
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                 Faculty of Commerce and Accountancy, TU
Internal Processes Auditor  Mr. Nuttapol Sribunruangrit
                           A.S.K.N. International Audit Services
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10. Head, School of Bio-Chemical Engineering and Technology (BCET) Assoc. Prof. Dr. Winyu Rattanapitikon
11. Head, School of Civil Engineering and Technology (CET) Assoc. Prof. Dr. Ekawit Nantajeewarawat
12. Head, School of Information, Computer, and Communication Technology (ICT) Asst. Prof. Dr. Aussadavut Dumrongsiri
13. Head, School of Management Technology (MT) Assoc. Prof. Dr. Bundit Limmeechokchai
14. Head, School of Manufacturing Systems and Mechanical Engineering (MSME)

ACADEMIC COMMITTEE

1. Director of SIIT                      Prof. Dr. Somnuk Tangtermsirikul
2. Assistant Director for Academic Affairs Prof. Dr. Pruettha Nanakorn
3. Head, Department of Common and Graduate Studies (CGS) Assoc. Prof. Dr. Luckhana Lawtrakul
4. Head, School of Bio-Chemical Engineering and Technology (BCET) Assoc. Prof. Dr. Winyu Rattanapitikon
5. Head, School of Civil Engineering and Technology (CET) Assoc. Prof. Dr. Ekawit Nantajeewarawat
6. Head, School of Information, Computer, and Communication Technology (ICT) Asst. Prof. Dr. Aussadavut Dumrongsiri
7. Head, School of Management Technology (MT) Assoc. Prof. Dr. Bundit Limmeechokchai
8. Head, School of Manufacturing Systems and Mechanical Engineering (MSME)
9. Chairperson of Chemical Engineering (ChE) Curriculum Assoc. Prof. Dr. Luckhana Lawtrakul
10. Chairperson of Civil Engineering (CE) Curriculum Assoc. Prof. Dr. Winyu Rattanapitikon
11. Chairperson of Computer Engineering (CPE) Curriculum Asst. Prof. Dr. Gun Srijuntongsiri
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13. Chairperson of Engineering Management (EM) Curriculum Asst. Prof. Dr. Pitt Suksampong
14. Chairperson of Industrial Engineering (IE) Curriculum Asst. Prof. Dr. Narameth Nananukul
15. Chairperson of Information Technology (IT) Curriculum Assoc. Prof. Dr. Ekawit Nantajeewarawat
16. Chairperson of Management Technology (MT) Curriculum Assoc. Prof. Dr. Aussadavut Dumrongsiri
17. Chairperson of Mechanical Engineering (ME) Curriculum Assoc. Prof. Dr. Bundit Limmeechokchai
18. Chairperson of Master of Engineering in Information and Communication Technology for Embedded Systems (ICTES) Curriculum Prof. Dr. Thanaruk Theeramunkong
19. Chairperson of Master of Engineering in Logistics and Supply Chain Systems Engineering (LSCSE) Curriculum Assoc. Prof. Dr. Navee Chiadamrong
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Ms. Waraporn Hinkaeaw ext. 1332 Chief of Registry Section

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Ms. Vanatchaporn Sutthanasarn ext. 1221 Chief of Accounting Section (Bangkadi)
Ms. Worakorn Petchtae ext. 1222 Chief of Financial Accounting Section (Rangsit)

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Mr. Jedsada Sangnak ext. 1702 Chief of Building and Ground Section and Engineer

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Ms. Hansa Teppathanakit ext. 1206 Chief of Personnel Section
Ms. Orapin Khawtham ext. 1202 Chief of Administrative Section
Ms. Rapeepan Narkruksa ext. 1204 General Documentation Coordinator

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Ms. Saowaphan Krisophon ext. 1609 Secretary

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Ms. Yaowaluk Laothoh ext. 1319 Chief of Finance and Budget Section
Ms. Punyanuch Yimmuang ext. 1316 Chief of Investment Planning Section

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Ms. Monthicha Auysakul ext. 1413 Chief of Research and Academic Quality Assurance Section

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Ms. Suchaya Rattanangam ext. 1402 Chief of Student Activities, Welfare, and Alumni Relations Section

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Ms. Boontiwa Thongkham ext. 4208 Chief of Central Coordinating Division
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Ms. Netnapa Anutarakul ext. 4312 Chief of Finance and Budget Section

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Ms. Pattanun Manachitrungrueng  ext. 1903

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Ms. Aroonkamol Samanchuen  ext. 6013
Ms. Chitra Pimnan  ext. 6010
Ms. Kachapac Tanyuvardhana  ext. 6012
Ms. Pavinee Jongjaitate  ext. 6011
Dr. Alice Sharp

Education:
Ph.D. Natural Resource Management, Hiroshima University, Japan
M.S. Natural Resource Management, Hiroshima University, Japan
M.S. Environmental Risk Assessment of Tropical Ecosystems, Chiang Mai University, Thailand
B.S. Biology, Chiang Mai University, Thailand

Academic Awards:
• 2002 Best Teaching Award, Sirindhorn International Institute of Technology
• Japanese Government (Monbukagakusho) Scholarship, 1995-2000
• GTZ (German Technical Cooperation) Scholarship, 1993-1995

Research Areas:
• Community based natural resource management
• Environmental Impact Assessment
• Pollution monitoring
• Solid waste management

Academic Rank: Associate Professor
E-mail: alice@siit.tu.ac.th

Dr. Khanin Nueangnoraj

Education:
Ph.D. Applied Chemistry, Tohoku University, Japan
M.Eng. Applied Chemistry, Tohoku University, Japan
B.Eng. Chemical Engineering, Kasetsart University, Thailand

Academic Awards:
• Best poster award at the 3rd Symposium on Graphene Oxide, Tokyo (Japan), 2014.
• BCSJ Award Article from Bulletin of the Chemical Society of Japan, 2014.
• Recipient of Sato Yo International Scholarship, 2011-2013.
• Best poster award at the Annual World Conference on Carbon, Shanghai (China), 2011.
• Best poster award at the 37th Japanese Carbon Conference, Himeji (Japan), 2010.

Research Areas:
• Carbon-based materials and their surface functionalization.
• Electrochemical capacitors and related hybrid systems for energy storage

Academic Rank: Lecturer
E-mail: khanin@siit.tu.ac.th
Dr. Luckhana Lawtrakul

Education:
- Dr.rer.nat.: Theoretical Biochemistry, University of Vienna, Austria
- M.Sc.: Physical Chemistry, Kasetsart University, Thailand
- B.Sc.: Chemistry, Kasetsart University, Thailand

Academic Awards:
- 2013 Gold Medal, 41st International Exhibition of Inventions of Geneva
- 2007 Best Teaching Award, Sirindhorn International Institute of Technology
- 2001 Research Award, National Research Council of Thailand (NRCT)
- 1997 Outstanding Thesis Award, Kasetsart University
- 1987-2000 Development and Promotion of Science and Technology Talents Project (DPST) Scholarship

Nationality: Thai

Academic Rank:
Associate Professor

E-mail:
luckhana@siit.tu.ac.th

Research Areas:
- Computer-aided molecular modeling and molecular design

Dr. Paiboon Sreearunothai

Education:
- Ph.D.: Physics, University of Cambridge, UK
- M.Sc.: Physics, University of Cambridge, UK
- B.A.: Physics, University of Cambridge, UK

Academic Awards:
- Development and Promotion of Science and Technology Talents Project (DPST) Scholarship, 1996-2006

Nationality: Thai

Academic Rank:
Assistant Professor

E-mail:
paiboon_sree@siit.tu.ac.th

Research Areas:
- Nanomaterials
- Photo-Active Materials
- Sensors
- Environmental Technology
- Optical and Time-Resolved Instrumentation

Dr. Pakorn Opaprakasit

Education:
- Ph.D.: Materials Science and Engineering, The Pennsylvania State University, Pennsylvania, USA
- M.S.: Materials Science and Engineering: Polymer Option, The Pennsylvania State University, Pennsylvania, USA
- B.Sc.: Chemistry, (1st Class Honors) Chiang Mai University, Thailand

Academic Awards:
- Young Researcher Award 2008, Thammasat University
- Gold Medal Prize, 1997, Chiang Mai University, Thailand
- Gold Medal Prize, 1997, The Thab Foundation, Chulalongkorn University, Thailand
- Development and Promotion of Science and Technology Talents Project (DPST) Scholarship, 1990-2003

Nationality: Thai

Academic Rank:
Associate Professor

E-mail:
pakorn@siit.tu.ac.th

Research Areas:
- Infrared spectroscopy
- Biomedical materials
- Nanomaterials
- Natural rubber
- Biodiesel
- Biocompatible/biodegradable polymers
- Sensors
Dr. Pisanu Toochinda

**Nationality:** Thai

**Education:**
- Ph.D. Chemical Engineering, The University of Akron, Ohio, USA
- M.S. Chemical Engineering, The University of Akron, Ohio, USA
- B.Sc. Chemistry, Mahidol University, Thailand

**Academic Awards:**
- 2014 Outstanding teacher Award, Thammasat University
- 2013 Best teaching Award, SIIT
- 2013 Distinguished teacher Award, SIIT
- 2013 Gold Medal, 41st International Exhibition of Inventions of Geneva
- 2008 Best Teaching Award, Sirindhorn International Institute of Technology
- 2004 Best Teaching Award, Sirindhorn International Institute of Technology

**Research Areas:**
- Hydrogen production from alcohol reforming and ammonia decomposition
- Heterogeneous catalysis and reactor design
- Molecular encapsulation/zeolite syntheses
- Preservation of Active compounds from plants by Nanoencapsulation

**Academic Rank:** Associate Professor

**E-mail:** pisanu@siit.tu.ac.th

Dr. Rachnarin Nitisoravut

**Nationality:** Thai

**Education:**
- Ph.D. Civil/Environmental Engineering, North Carolina State University, NC, USA
- M.S. Biosystem Engineering, University of Hawaii at Manoa, HI, USA
- B.S. Chemical Technology/Chemical Engineering, Chulalongkorn University, Thailand
- Diploma Analytical Chemistry, (Honors) Institute of Analytical Chemistry Training, Ministry of Science, Technology and Environment, Thailand

**Academic Awards:**
- First position in order of merit award in Master of Science (Biochemistry) Program, University of Indore, India

**Research Areas:**
- Biosystem engineering
- Water and wastewater treatment/management
- Low-carbon technologies

**Academic Rank:** Associate Professor

**E-mail:** snitisor@siit.tu.ac.th

Dr. Sandhya Babel

**Nationality:** Indian

**Education:**
- D.Tech.Sc. Environmental Technology and Management, Asian Institute of Technology (AIT), Thailand
- M.Sc. Environmental Technology and Management, Asian Institute of Technology (AIT), Thailand
- M.Sc. Biochemistry, University of Indore, India
- B.Sc. Biology/Chemistry, (1st Class) University of Indore, India

**Academic Awards:**
- First position in order of merit award in Master of Science (Biochemistry) Program, University of Indore, India

**Research Areas:**
- Adsorption
- Bio-hydrogen production
- Phytoremediation
- Solid and hazardous waste management
- Wastewater treatment

**Academic Rank:** Professor

**E-mail:** sandhya@siit.tu.ac.th
Dr. Siwarutt Boonyarattanakalin
Nationality: Thai

Education:
Ph.D.  Organic Chemistry, The Pennsylvania State University, USA
B.S.  Chemistry, Colorado State University, USA

Academic Awards:
- Asian CORE Program (ACP) Lectureship Award for Japan
- Asian CORE Program (ACP) Lectureship Award for Taiwan
- Young Scientist Award by Thammasat University
- Research Grant Award, Thailand Toray Research Foundation
- Best Thesis in Chemistry and Pharmacy, National Research Council of Thailand (NRCT)
- Roche Research Foundation Postdoctoral Fellowship

Research Areas:
- Design, synthesis, and evaluation of biologically active molecules
- Design and validation of assays to evaluate biologically active molecules and assays to study cellular processes
- Developments of biological and chemical methods for carbon recycling
- Organic synthesis

Academic Rank: Assistant Professor
E-mail: siwarutt@siit.tu.ac.th
siwarutt.siit@gmail.com

Dr. Wanwipa Siriwatwechakul
Nationality: Thai

Education:
Ph.D.  Chemical Engineering, Princeton University, USA
M.S.  Chemical Engineering, Princeton University, USA
B.S.  Chemical Engineering, Massachusetts Institute of Technology, USA

Academic Awards:
- King's Scholarship, 1993
- Bronze Medal, International Chemistry Olympiad, 1992

Research Areas:
- Polymers and biomaterials

Academic Rank: Assistant Professor
E-mail: wanwipa@siit.tu.ac.th
Dr. Amorn Pimanmas
Nationality: Thai

Education:
Ph.D.  Civil Engineering, The University of Tokyo, Japan
M.Eng.  Civil Engineering, University of Tokyo, Japan
B.Eng.  Civil Engineering, Chulalongkorn University, Thailand

Academic Awards:
• Gold Medal Prize, 1994, Chulalongkorn University, Thailand

Research Areas:
• Behavior, analysis, and evaluation of damaged reinforced concrete members and structures
• Nonlinear finite element analysis of reinforced concrete
• Strengthening of reinforced concrete members

Present Academic and Professional Activities:
• General Secretary, Council of Engineers
• Board, Council of Engineers
• Chairperson, CE Curriculum Certifying Subcommittee, Council of Engineers
• Advanced Research Scholar, Thailand research fund
• Board, Council of Military Education

Dr. Amin Eisazadeh Otaghsaraei
Nationality: Iranian

Education:
Ph.D.  Geotechnic, University of Technology, Malaysia
M.Sc.  Geotechnic, Tehran Polytechnic, Iran
B.Sc.  Civil Engineering, Tehran University, Iran

Academic Awards:
• 2012 UTM ICON Award (Best Researcher with IF Publication)
• 2005 Masters Degree (Hons) (GPA of 16.89/20)
• 2003 Ranked 119 in Iran's Civil Eng. Masters Degree Qualification Test
• 1999 Secondary School Diploma (Hons) (GPA of 19.23/20)

Research Areas:
• Tropical Soil Engineering
• Soil Stabilization
• Geochemistry
• Water Treatment

Present Academic and Professional Activities:
• Member of Civil Engineering Society of Iran (2010 - present)
Dr. Mongkut Piantanakulchhai

Nationality: Thai

Education:
- Ph.D.  Transportation, Tohoku University, Japan
- M.Eng.  Transportation, Asian Institute of Technology (AIT), Thailand
- B.Eng.  Civil Engineering, Chulalongkorn University, Thailand

Academic Awards:
- Researcher Awards from Thammasat University, 2006 and 2015
- Thomas L. Saaty's Best Paper Award at the Eighth International Symposium on the Analytic Hierarchy Process (ISAHP), 2005
- Barbara and John Hugh Jones Prize (Award for the Most Outstanding Transportation Engineering Student), 1995, Asian Institute of Technology (AIT)

Research Areas:
- Intelligent transportation systems (ITS)
- Multi criteria decision making in transportation planning
- Activity based travel demand modeling
- Computable general equilibrium modelling for transport and energy policy studies
- Evacuation planning
- Traffic simulation

Present Academic and Professional Activities:
- Executive Board Member, Thai Society for Transportation and Traffic Studies
- Regular Member, Eastern Asia Society for Transportation Studies

Dr. Pruettha Nanakorn

Nationality: Thai

Education:
- Ph.D.  Transportation, Tohoku University, Japan
- M.Eng.  Transportation, Asian Institute of Technology (AIT), Thailand
- B.Eng.  Civil Engineering, Chulalongkorn University, Thailand

Academic Awards:
- Researcher Awards from Thammasat University, 2006 and 2015
- Barbara and John Hugh Jones Prize (Award for the Most Outstanding Transportation Engineering Student), 1995, Asian Institute of Technology (AIT)

Research Areas:
- Computational mechanics
- Finite element technology
- Structural optimization
- Design automation

Present Academic and Professional Activities:
- Executive Board Member, Thai Society for Transportation and Traffic Studies
- Regular Member, Eastern Asia Society for Transportation Studies
Dr. Somnuk Tangtermsirikul

Education:
D.Eng. Civil Engineering, The University of Tokyo, Japan
M.Eng. Civil Engineering, The University of Tokyo, Japan
B.Eng. Civil Engineering, Chulalongkorn University, Thailand

Academic Awards:
- Excellent Research Award, National Research Council 2016
- National Distinguished Researcher, National Research Council 2013
- Chair Professor of Siam Cement Group, since 2012
- Distinguished Scholar of Science and Technology of Thammasat University, 2008
- Outstanding Technologist Award from the Foundation for the Promotion of Science and Technology under the Patronage of H.M. the King, 2002
- Outstanding Researcher 1999, Thammasat University, Thailand
- Paper Award from JSCE, 1999
- Yoshida Award from JSCE, 1993

Academic Rank: Professor
E-mail: somnuk@siit.tu.ac.th

Research Areas:
- Modeling of concrete behavior
- Durability evaluation and service life design of concrete structures
- High performance cementitious based materials
- Special concrete
- Use of wastes and recycled materials in cement and concrete
- Repair, maintenance, and assessment of concrete structures

Present Academic and Professional Activities:
- Honorary Member, Japan Concrete Institute
- Advisor, Thailand Concrete Association
- Advisor, Civil Engineering Committee, Engineering Institute of Thailand
- Treasurer, Asian Concrete Federation
- Advisory Board of the Advanced Concrete Technology International Journal
- Editorial Board of Journal of Asian Concrete Federation
- Editorial Board of the ASEAN Engineering Journal
- Chairman of Editorial Board of the Journal of Thailand Concrete Association

Dr. Taweep Chaisomphob

Education:
D.Eng. Civil Engineering, The University of Tokyo, Japan
M.Eng. Civil Engineering, The University of Tokyo, Japan
B.Eng. Civil Engineering, (1st Class Honors) Chulalongkorn University, Thailand

Academic Awards:
- Fellow, School of Engineering, The University of Tokyo, Japan, 2007
- The Outstanding Researcher 1998, Thammasat University
- Japanese Government (Monbukagakusho) Scholarship, 1982-1987
- Gold Medal Prize, 1982, Chulalongkorn University, Thailand

Academic Rank: Associate Professor
E-mail: taweep@siit.tu.ac.th

Research Areas:
- Socio-technology
- Solid waste management
- Steel structures
- Structural mechanics

Present Academic and Professional Activities:
- Chairperson, Subcommittee on Hot-rolled Structural Steel, Thailand Industrial Standards Institute (TISI)
- Chairperson, Subcommittee on Cold-formed Structural Steel, Thailand Industrial Standards Institute (TISI)
- Member, Subcommittee on Certifying Civil Engineering Degree and Curriculum, Council of Engineers of Thailand
Dr. Winyu Rattanapitikon

Education:

D.Eng.  Civil Engineering, Yokohama National University, Japan
M.Eng.  Water Resources Development, Asian Institute of Technology (AIT), Thailand
B.Eng.  Agricultural Engineering, Khon Kaen University, Thailand

Academic Awards:

• 2011 SIIT Distinguished Teacher Award, Sirindhorn International Institute of Technology
• 2011 Best Teaching Award, Sirindhorn International Institute of Technology
• TU Outstanding Teacher in Science and Technology Award 2006, Thammasat University
• 2005 Best Teaching Award, Sirindhorn International Institute of Technology
• 1998 Best Teaching Award, Sirindhorn International Institute of Technology
• Japanese Government (Monbukagakusho) Scholarship, 1992-1995
• The James A. Linen III Memorial Prize (Award for the Most Outstanding Water Resources Development Student), 1991, Asian Institute of Technology (AIT), Thailand

Research Areas:

• Mathematical modeling
• Sediment Transport
• Beach Deformation

Academic Rank:
Associate Professor

E-mail:
winyu@siit.tu.ac.th

Nationality: Thai
CONSTRUCTION AND MAINTENANCE TECHNOLOGY RESEARCH CENTER (CONTEC)

RESEARCH FACULTY MEMBERS

Dr. Warangkana Saengsoy

Education:
- Ph.D. Resources and Eco-materials \ Engineering, Hokkaido University, Japan
- M.Sc. Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University (TU), Thailand
- B.Eng. Civil Engineering, (2nd Class Honors) SIIT, TU, Thailand

Academic Awards:
- Outstanding Researcher Award for research award recipients from external organizations in 2014, Thammasat University (2014)
- ACF 2014 Best Paper Award (2014)
- AUN/SEED-Net's Short-Term Research Program in Japan (SRJP) (2014)
- Outstanding Young Researcher Award, Thammasat University (2012)
- 2nd Class Honors for Bachelor's degree (2001)

Research Areas:
- Cement chemistry
- Hydration reaction and microstructure of cementitious system
- Chemical and microstructural analysis of hardened concrete
- Utilization of pozzolans and eco-materials in concrete
- Durability of concrete

Present Academic and Professional Activities:
- Committee on Concrete Materials, Thai Concrete Association (TCA)
- Advisor to the Committee on Development of Building Structures of Ministry of Defense

Dr. Ganchai Tanapornraweekit

Education:
- Ph.D. Civil and Environmental Engineering, University of Melbourne, Australia
- M.Sc. Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University (TU), Thailand
- B.Eng. Civil Engineering, Chulalongkorn University, Thailand

Academic Awards:
- IPRS & MIRS scholarships from Australian Government and University of Melbourne (2006-2010)
- Highly commended presentation in Postgrad-seminar from University of Melbourne (2009)
- SIIT Full Scholarship (2001-2004)

Research Areas:
- Fiber reinforced concrete for hybrid structures
- Degree of restraint and effects of restrained shrinkage cracks in concrete structures
- Repair and strengthening of concrete structures
- Finite element analysis (FEA) of reinforced concrete structures
- Analysis and design of structures under shock and impact including explosion/blast loads
- Explosion/blast wave propagation

Present Academic and Professional Activities:
- Committee on Concrete Materials, Thai Concrete Association (TCA)
- Advisor to the Committee on Development of Building Structures of Ministry of Defense

Academic Rank:
- Research Assistant Professor

E-mail:
warangkana@siit.tu.ac.th

Academic Rank:
- Research Faculty Member

E-mail:
ganchai@siit.tu.ac.th

Nationality: Thai

CONSTRUCTION AND MAINTENANCE TECHNOLOGY RESEARCH CENTER (CONTEC)

RESEARCH FACULTY MEMBERS

Dr. Warangkana Saengsoy

Education:
- Ph.D. Resources and Eco-materials \ Engineering, Hokkaido University, Japan
- M.Sc. Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University (TU), Thailand
- B.Eng. Civil Engineering, (2nd Class Honors) SIIT, TU, Thailand

Academic Awards:
- Outstanding Researcher Award for research award recipients from external organizations in 2014, Thammasat University (2014)
- ACF 2014 Best Paper Award (2014)
- AUN/SEED-Net's Short-Term Research Program in Japan (SRJP) (2014)
- Outstanding Young Researcher Award, Thammasat University (2012)
- 2nd Class Honors for Bachelor's degree (2001)

Research Areas:
- Cement chemistry
- Hydration reaction and microstructure of cementitious system
- Chemical and microstructural analysis of hardened concrete
- Utilization of pozzolans and eco-materials in concrete
- Durability of concrete

Present Academic and Professional Activities:
- Committee on Concrete Materials, Thai Concrete Association (TCA)
- Technical Subcommittee for drafting Thai Green Label: Portland Cement and Hydraulic Cement, Thailand Environment Institute
- Committee for drafting TIS Standard: Ground Coal Bottom Ash use as an Admixture in concrete

Dr. Ganchai Tanapornraweekit

Education:
- Ph.D. Civil and Environmental Engineering, University of Melbourne, Australia
- M.Sc. Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University (TU), Thailand
- B.Eng. Civil Engineering, Chulalongkorn University, Thailand

Academic Awards:
- IPRS & MIRS scholarships from Australian Government and University of Melbourne (2006-2010)
- Highly commended presentation in Postgrad-seminar from University of Melbourne (2009)
- SIIT Full Scholarship (2001-2004)

Research Areas:
- Fiber reinforced concrete for hybrid structures
- Degree of restraint and effects of restrained shrinkage cracks in concrete structures
- Repair and strengthening of concrete structures
- Finite element analysis (FEA) of reinforced concrete structures
- Analysis and design of structures under shock and impact including explosion/blast loads
- Explosion/blast wave propagation

Present Academic and Professional Activities:
- Committee on Concrete Materials, Thai Concrete Association (TCA)
- Advisor to the Committee on Development of Building Structures of Ministry of Defense

Academic Rank:
- Research Assistant Professor

E-mail:
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Academic Rank:
- Research Faculty Member

E-mail:
ganchai@siit.tu.ac.th

Nationality: Thai
Dr. Krittiya Kaewmanee

Nationality: Thai

Education:
Ph.D. Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University (TU), Thailand
M.Eng. Civil Engineering, Kochi University of Technology, Japan
B.Eng. Civil Engineering, SIIT, TU, Thailand

Academic Awards:
• An outstanding oral presentation award at the RGJ Seminar Series LX I: Innovation and Sustainable Development in Civil Engineering (September 4, 2008)
• Royal Golden Jubilee Scholarship (PhD Program), The Thailand Research Fund (2007)
• Master’s Degree Scholarship, Kochi University of Technology, JAPAN (1999 - 2001)

Research Areas:
• Design of concrete mix proportions
• Multi-binder concrete
• Use of waste and recycled materials in concrete
• Thermal analysis of mass concrete

Present Academic and Professional Activities:
• Member, Subcommittee on concrete and materials, Engineering Institute of Thailand
• Secretariat, Asian Concrete Federation (ACF)

Academic Rank: Research Faculty Member
E-mail: kritt@siit.tu.ac.th

Dr. Lalita Yongchaitrakul

Nationality: Thai

Education:
Ph.D. Resources and Eco-materials Engineering, Hokkaido University, Japan
M.Sc. Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University (TU), Thailand
B.Eng. Chemical Engineering, SIIT, TU, Thailand

Academic Awards:
• Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) Scholarship (2013-2016)
• Award winning paper at conference of Sustainable Construction Materials and Technologies (SCMT*4), Las Vegas, USA 2016

Research Areas:
• Cement chemistry
• Chemical and microstructural analysis of hardened concrete
• Durability of concrete
• Alkali-silica reaction of concrete

Academic Rank: Research Faculty Member
E-mail: Lalita_by@siit.tu.ac.th
Dr. Pakawat Sancharoen

Nationality: Thai

Education:
- Ph.D. Civil Engineering, The University of Tokyo, Japan
- M.Eng. Civil Engineering, The University of Tokyo, Japan
- M.Sc. Environmental Management, Chulalongkorn University, Thailand
- B.Eng. Civil Engineering, (2nd Class Honors) Chulalongkorn University, Thailand

Academic Awards:
- Outstanding young researcher award, Thammasat University (2012)
- Excellent Presentation Award at Annual Convention of Japan Concrete Institute (2006)
- Excellent Paper Award at Annual Convention of Japan Concrete Institute (2006)
- Excellent Presentation Award at Annual Meeting of Japan Cement Association (2003)
- 2nd class honors, Department of Civil Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok, Thailand (2001)

Research Areas:
- Waste utilization in concrete
- Corrosion of reinforcing steel in concrete
- Durability of concrete and repairing system
- Repairing and maintenance management of reinforced concrete, prestressed concrete and steel structures
- Non-Destructive Testings on structures

Present Academic and Professional Activities:
- Subcommittee member (Maintenance), Thailand Concrete Association

Academic Rank:
Research Faculty Member

E-mail:
pakawat@siit.tu.ac.th

Dr. Parnthep Julnipitawong

Nationality: Thai

Education:
- Ph.D. Civil Engineering, Hamburg University of Technology, Germany
- M.Sc. Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University (TU), Thailand
- B.Eng. Building Facilities Engineering, (2nd Class Honors) SIIT, TU, Thailand

Academic Awards:
- 2nd class honors for bachelor’s degree

Research Areas:
- Water transport in concrete
- Bleeding of concrete
- Moisture measurement techniques in concrete
- Fresh properties of concrete

Present Academic and Professional Activities:
- Subcommittee - Thai Concrete Association (TCA)

Academic Rank:
Research Faculty Member

E-mail:
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Mr. Arosha Dabarera  
Nationality: Sri Lankan

Education:
- M.Sc. Engineering and Technology, Sirindhorn International Institute of Technology (SIIT), Thammasat University (TU), Thailand
- B.Sc. Civil & Infrastructure Engineering, Asian Institute of Technology (AIT), Thailand

Academic Awards:
- SIIT Master’s degree scholarship for Excellent Foreign Students (EFS) (2014-2016)
- 1st Class Honors for Bachelor’s degree (2014)
- AIT academic fellowship (2012-2014)

Research Areas:
- Modeling thermal properties of mass concrete
- Durability of concrete

Present Academic and Professional Activities:
- Associate member of the Institution of Engineers, Sri Lanka (2016 - present)

Academic Rank: Researcher
E-mail: arosha@siit.tu.ac.th

Mr. Pongsak Wiwatrojanagul  
Nationality: Thai

Education:
- M.Eng. Structure of Engineering, Asian Institute of Technology, Thailand
- B.Eng. Civil Engineering, SIIT, Thailand

Academic Awards:
- RTG Fellowships (2008 - 2010)

Research Areas:
- Structure Inspection and Non-Destructive Testing

Academic Rank: Researcher
E-mail: Pongsak.w@siit.tu.ac.th
SCHOOL OF INFORMATION, COMPUTER, AND COMMUNICATION TECHNOLOGY

Dr. Banlue Srisuchinwong

Education:
Ph.D. Electronics, The University of Manchester, The UK.
M.Sc. Electronics, The University of Manchester, The UK.
B.Eng. Electronics (Honors) King Mongkut’s Institute of Technology Ladkrabang, Thailand.

Academic Awards:
• The TU Distinguished Research Award 2016 in Science and Technology, Thammasat University, 26 December 2016.
• The Best Paper Award 2016 (Gold Award), the IEEE Management and Innovation Technology International Conference (MITicon 2016), October 2016.
• The SIIT Research Award 2011, SIIT, 28 June 2012.
• The ICT Award 2010, (the 3rd-prize award), the Ministry of Information and Communication Technology (MICT), 9 March 2011.
• The British Council Scholarship, the UK, October 1989-1991.
• The Overseas Research Studentship (ORS) Award, CVCP, the UK, October 1988-1989.
• The Philips Scholarship, Philips International Institute of Technological Studies (PII), and Philips Research Laboratories, Eindhoven, the Netherlands, January 1987-February 1988.

Research Areas:
• Microelectronics
• Periodic/chaotic circuits and systems

Present Academic and Professional Activities:
• Associate Member, Thai Academy of Science and Technology Foundation
• Researcher, National Research Council of Thailand (NRCT)
• Member, Academic Committee No. 900, Thai Industrial Standard Institute, Ministry of Industry, 1997-2013
• Treasurer, Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI) Association, 2004-2010
• Secretary General, Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI) Association, 2002-2003

Academic Rank:
Associate Professor

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Dr. Bunyarit Uyyanonvara

Education:
PhD Image Processing King’s College, University of London, UK
BSc Physics. (1st Class Honors) Prince of Songkla University, Thailand

Academic Awards:
• 2007 Best Teaching Award, Sirindhorn International Institute of Technology
• 2003 Best Teaching Award, Sirindhorn International Institute of Technology
• Development and Promotion of Science and Technology Talents Project (DPST) Scholarship, 1990-2000

Research Areas:
• Medical image processing
• Pattern recognition

Academic Rank:
Associate Professor

E-mail: bunyarit@siit.tu.ac.th

Nationality: Thai
Dr. Cholwich Nattee

**Nationality:** Thai

**Education:**
- **D.Eng.** Computer Science, Tokyo Institute of Technology, Japan
- **M.Eng.** Computer Science, Tokyo Institute of Technology, Japan
- **B.Eng.** Computer Engineering, Chulalongkorn University, Thailand

**Academic Awards:**
- Finalist of "Telecom Prototype Award" from the Telecommunications Research and Industrial Development Institute (with K. Zintus-art, S. Saetia, and V. Pongparnich)
- Young Researcher Award 2009, Thammasat University
- Very Good Research Award 2008, Thammasat University
- Japanese Government (Monbukagakusho) Scholarship, 1998-2004

**Research Areas:**
- Artificial intelligence
- Machine learning
- Knowledge discovery and data mining
- Artificial intelligence applications in distance learning
- Pattern recognition

**Academic Rank:**
Associate Professor

**E-mail:**
cholwich@siit.tu.ac.th

Dr. Chalie Charoenlarpnopparut

**Nationality:** Thai

**Education:**
- **Ph.D.** Electrical Engineering, The Pennsylvania State University, University Park, PA, USA
- **M.S.** Electrical Engineering, The Pennsylvania State University, University Park, PA, USA
- **B.Eng.** Electrical Engineering, (1st Class Honors) Chulalongkorn University, Bangkok, Thailand

**Academic Awards:**
- 2011 SIIT Research Award 2011
- 2010 Distinguished Teacher Award, SIIT
- 2010 Best Teaching Award, SIIT
- 2008 Outstanding Teacher in Science and Technology Award, Thammasat University
- 2006 Best Teaching Award, SIIT
- 2002 Best Teaching Award, SIIT
- Best Presenter-in-the-track Award, Automatic Control Conference, USA, 1998
- Gold Medal Prize, 1993, Chulalongkorn University

**Research Areas:**
- Multidimensional systems and signal processing
- Image processing/pattern recognition
- Signal processing for communication
- STEM Education & Learning
- Smart grid Technology

**Present Academic and Professional Activities:**
- Associate Editor, Multidimensional Systems and Signal Processing, an international journal, Springer, USA
- Sigma Xi, The Science Research Society, USA, 2000
- Phi Kappa Phi Honor Society, USA, 1995

**Academic Rank:**
Associate Professor

**E-mail:**
chalie@siit.tu.ac.th
Dr. Ekawit Nantajeewarawat

Education:
- D.Eng. Computer Science, Asian Institute of Technology (AIT), Thailand
- M.Eng. Computer Science, Asian Institute of Technology (AIT), Thailand
- B.Eng. Computer Engineering, Chulalongkorn University, Thailand

Academic Awards:
- Very Good Research Award 2008, Thammasat University
- 2001 Best Teaching Award, SIIT
- Outstanding Dissertation Award 1999, National Research Council of Thailand (NRCT)
- 1997 Best Teaching Award, SIIT

Research Areas:
- Knowledge representation
- Automated reasoning
- Knowledge-based software engineering
- Semantic web
- Information extraction

Dr. Gun Srijuntongsiri

Education:
- Ph.D. Computer Science, Cornell University, USA
- M.S. Computer Science, Cornell University, USA
- B.S. Computer Science, Cornell University, USA

Academic Awards:
- NRCT Dissertation Award 2012
- Thammasat University Young Researcher Award 2012

Researcher Award 2012
- 22nd Place in the 2000 ACM Programming Contest World Finals
- King's Scholarship, 1997

Research Areas:
- Scientific computing and numerical analysis, with focus on intersection problems and optimization

Dr. Itthisek Nilkhamhang

Education:
- Ph.D. Integrated System Design Engineering, Keio University, Tokyo, Japan
- M.Eng. Integrated System Design Engineering, Keio University, Tokyo, Japan
- B.Eng. Electrical Engineering, (1st Class Honors) Sirindhorn International Institute of Technology, Thammasat University, Thailand

Academic Awards:
- Outstanding Young Researcher Award, Thammasat University, 2014
- Best Teaching Award, Sirindhorn International Institute of Technology, 2014
- Japanese Government (Monbukagakusho) Scholarship, 2005-2008
- Keio Graduate Scholarship, 2002-2005

Research Areas:
- Robust and adaptive control
- Iterative control
- System identification
- Nonlinear systems
- Mechatronics
- Robotics

Nationality: Thai

Academic Rank: Associate Professor
E-mail: ekawit@siit.tu.ac.th

Academic Rank: Assistant Professor
E-mail: gun@siit.tu.ac.th

Academic Rank: Assistant Professor
E-mail: itthisek@siit.tu.ac.th
Dr. Komwut Wipusitwarakun  
Nationality: Thai

**Education:**
- Ph.D.  Communication Engineering, Osaka University, Osaka, Japan
- M.Eng.  Communication Engineering, Osaka University, Osaka, Japan
- B.Eng.  (Honors)  Electrical Engineering, Chulalongkorn University, Thailand

**Academic Awards:**

**Research Areas:**
- Mobile Code
- Internet and Computer Networking including:
  - Wireless Mesh Networks
  - Heterogeneous internetworking
  - Active Networks
  - Mobile Agents
  - Overlay Service Networks
  - Self-healing Networks
  - Cross-layer Protocol Design and Analysis
  - Network Virtualization

**Academic Rank:**
Associate Professor

**E-mail:**
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Dr. Nguyen Duy Hung  
Nationality: Vietnamese

**Education:**
- Ph.D.  Remote Sensing and GIS, Asian Institute of Technology (AIT), Thailand
- M.Eng.  Computer Science, AIT, Thailand
- B.Eng.  Electronics and Telecommunication, Hanoi University of Technology, Vietnam

**Academic Awards:**
- JICA scholarship, 2003-2006, AIT
- Bronze medal in International Chemistry Olympiad, 1996, Russia
- Hisamatsu prize (Award for the Most Outstanding Computer Science Student), 2002, AIT

**Research Areas:**
- Artificial Intelligence
- Multi-agents
- Argumentation
- Proof Procedures
- Dialogues
- Contract Dispute Resolution Systems

**Academic Rank:**
Lecturer

**E-mail:**
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Dr. Nirattaya Khamsemanan  
Nationality: Thai

**Education:**
- Ph.D.  Mathematics, University of California, Los Angeles (UCLA), USA
- M.A.  Mathematics, University of California, Los Angeles (UCLA), USA
- B.A.  Mathematics, (Cum Laude) Cornell University, USA

**Academic Awards:**
- 2009 Best Teaching Award, Sirindhorn International Institute of Technology
- The Robert Sorgenfrey Distinguished Teaching Assistant Award 2005, Department of Mathematics, UCLA, CA
- The Cranson W. and Edna B. Shelly Award for Excellence in Undergraduate Research in Astronomy 1999-2000, Cornell University, NY
- Development and Promotion of Science and Technology Talents Project (DPST) Scholarship, 1996-2006

**Research Areas:**
- Algebraic topology
- Cryptography
- Intelligent User Interface (IUI)
- Machine learning

**Academic Rank:**
Associate Professor

**E-mail:**
nirattaya@siit.tu.ac.th
Dr. Pakinee Aimmanee  

**Education:**
- Ph.D.  Applied Mathematics, University of Colorado, USA
- M.S.  Applied Mathematics, University of Colorado, USA
- B.S. (Cum Laude)  Mathematics, University of Delaware, USA

**Academic Awards:**
- A person who received a large project award 2014, Thammasat University
- Very Good Research Award 2008, Thammasat University
- Stribic fellowship awarded to women who succeed in teaching and researching, University of Colorado at Boulder, 2002-2003
- William Clark Prize, a prize given to an excellent student in Mathematics, University of Delaware, 1999
- Development and Promotion of Science and Technology Talents Project (DPST) Scholarship, 1995-2005
- Second prize winner in a science competition, Chiang Mai University, 1993

**Academic Rank:**
Assistant Professor

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pakinee@siit.tu.ac.th

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Dr. Prapun Suksompong  

**Education:**
- Ph.D.  Electrical and Computer Engineering, Cornell University, Ithaca, New York, USA
- M.S.  Electrical and Computer Engineering, Cornell University, Ithaca, New York, USA
- B.S.  Electrical and Computer Engineering (Summa Cum Laude), Engineering, Cornell University, Ithaca, New York, USA

**Academic Awards:**
- 2013 Best Teaching Award, Sirindhorn International Institute of Technology
- 2013 Outstanding Young Researcher Award, Thammasat University
- 2011 SIIT Research Award
- 2009 Best Teaching Award, Sirindhorn International Institute of Technology
- 2006 Teaching Assistant of the Year, Cornell IEEE student branch
- 2002 Fellowship, Cornell University
- King's Scholarship, 1997

**Academic Rank:**
Assistant Professor

**E-mail:**
prapun@siit.tu.ac.th

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**Research Areas:**
- Information retrieval
- Data mining
- Applied mathematics
- Image processing
- Acoustic processing
- Information Hiding
- Information Extraction

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**Research Areas:**
- Wireless communications
- Cognitive radio
- Indoor positioning principles and localization techniques
- Computational neuroscience
- Energy-efficient coding
- Poisson process and Poisson convergence
- Community-contributed networks

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**Nationality:** Thai
Dr. Sasiporn Usanavasin

Nationality: Thai

Education:
Ph.D.  Software Engineering, Keio University, Japan
M.S.  Software Engineering, Keio University, Japan
B.Sc.  Information Technology, (1st Class Honors) Sirindhorn International Institute of Technology, Thailand

Research Areas:
- Software Engineering
- Semantic Web and Knowledge Engineering
- Service Science and Service Innovation

Present Academic and Professional Activities:
- Head, Special Interest Group for Service Science in Education, NECTEC
- Committee, Service Research Innovation Technical Committees, NECTEC

Academic Rank:
Lecturer

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sasiporn.us@siit.tu.ac.th

Dr. Somsak Kittipiyakul

Nationality: Thai

Education:
Ph.D.  Electrical and Computer Engineering, University of California at San Diego, USA
M.Eng.&S.B.  Electrical Engineering and Computer Science, Massachusetts Institute of Technology, USA

Research Areas:
- Wireless communications and networking
- Resource allocation and scheduling
- Performance analysis of queuing systems
- Optimization
- Smart grid
- Forecasting

Academic Rank:
Assistant Professor

E-mail:
somsak@siit.tu.ac.th

Dr. Stanislav S. Makhanov

Nationality: Russian

Education:
Ph.D.  Applied Mathematics, Computer Center of the Russian Academy of Science, Moscow, Russia
Diploma  English Language, Moscow State University of Linguistics, Russia
M.Sci.  Applied Mathematics, Moscow State University, Russia

Research Areas:
- Robotics
- Image processing
- Pattern Recognition
- Grid generation

Academic Awards:
- Excellent Publication Award 2016, SIIT
- Excellent Research Award 2015, SIIT
- Very Good Research Award, 2009, Thammasat University
- Very Good Research Award, 2007, Thammasat University
- Outstanding Research Award, 2006, Thammasat University

Academic Rank:
Professor

E-mail:
makhanov@siit.tu.ac.th
Dr. Toshiaki Kondo

**Education:**
- Ph.D.  Image Processing, National University of Singapore, Singapore
- M.Eng.  Image Processing, The University of Sydney, Australia
- M.Eng.  Information Processing, Tokyo Institute of Technology, Japan
- B.Eng.  Mechanical Engineering, Tokyo Institute of Technology, Japan

**Academic Awards:**
- Best Paper Award at the 9th Regional Conference on Electrical and Electronics Engineering (RCEEE 2016), Vietnam, 2016.
- Best Teaching Award, Sirindhorn International Institute of Technology, 2016.
- Outstanding Presentation Award at the 30th JSST Annual Conference (JSST 2011), Japan, 2011.
- Outstanding Poster Award at the 12th International Conference on Biomedical Engineering (ICBME 2005), Singapore, 2005.

**Research Areas:**
- Digital image processing (esp. feature detection and segmentation in 2-D and 3-D)
- Computer vision (esp. depth estimation and motion estimation)
- Pattern recognition (esp. human face recognition)

**Academic Rank:**
Associate Professor

**E-mail:**
tkondo@siit.tu.ac.th

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Dr. Teerayut Horanont

**Education:**
- Ph.D.  Spatial Information Engineering, The University of Tokyo, Japan
- M.Sc.  Remote Sensing and Geographic Information System, Asian Institute of Technology (AIT), Thailand
- B.Arch.  Architecture, Chulalongkorn University, Thailand

**Academic Awards:**
- Best Paper, PURBA Workshop, ACM Ubicomp conference 2013
- Best Paper, 5th International Conference on Health GIS 2013
- Best Paper, AsiaGIS conference 2008
- Young GIS Professional Award, Asia Geographic Information System Association, 2008
- Japanese Government Monbukagakusho Scholarship 2007-2010
- Biography in Asian/American Who’s Who, selected by editor, Vol. IV, 2004
- Ed Forrest Internship Program awards, The Geospatial Information & Technology Association (GITA), USA, 2003
- The John A. Hrones Prize for outstanding academic works, School of Advanced Technologies, AIT, 2002
- AIT Institute Fellowship (Full Scholarship) Award, 2001

**Present Academic and Professional Activities:**
- Voting Member, IndoorGML, Open Geospatial Consortium (OGC)

**Research Areas:**
- Geographic Information System (GIS)
- Urban Computing
- Indoor Navigation
- Geospatial Big Data Platform Development and Analysis
- Smart City and Precision Agriculture
- Open Source Software and Open Standards Development

**Academic Rank:**
Assistant Professor

**E-mail:**
teerayut@siit.tu.ac.th
Dr. Thanaruk Theeramunkong

Nationality: Thai

Education:
- D.Eng. Computer Science, Tokyo Institute of Technology, Japan
- M.Eng. Computer Science, Tokyo Institute of Technology, Japan
- B.Eng. Electrical and Electronics Engineering, Tokyo Institute of Technology, Japan

Academic Awards:
- National Distinguished Researcher Award 2014 from National Research Council of Thailand (NRCT)
- Very Good Research Awards 2008-2010, Thammasat University
- Best Paper Award from the Japanese Society for Artificial Intelligence, 1994
- Scholarship from Tokyo Marine, 1992-1995

Research Areas:
- Natural language processing
- Artificial Intelligence
- Knowledge data discovery
- Information retrieval
- Data mining
- Machine Learning (ML)
- Intelligent information systems

Academic Rank: Professor

E-mail: thanaruk@siit.tu.ac.th

Dr. Waree Kongprawechnon

Nationality: Thai

Education:
- Ph.D. Mathematics Engineering and Information Physics, The University of Tokyo, Japan
- M.Eng. Control Engineering, Osaka University, Japan
- B.Eng. Electrical Engineering, (1st Class Honors) Chulalongkorn University, Thailand

Academic Awards:

Research Areas:
- The theory in H∞ control
- Control theory
- Robust control
- System identification
- Adaptive control
- Learning control
- Neural network
- Machine learning

Academic Rank: Associate Professor

E-mail: waree@siit.tu.ac.th
Dr. Virach Sornlertlamvanich

Nationality: Thai

Education:
D.Eng. Computer Science, Tokyo Institute of Technology, Japan
M.Eng. Precision Mechanics, Kyoto University, Japan
B.Eng. Precision Mechanics, Kyoto University, Japan

Academic Awards:
- ASEAN Outstanding Engineering Achievement Award 2011, AFEO
- Best paper award in 2009 ACM International Workshop on Intercultural Collaboration
- Best paper award in 2009 National Conference on Computing and Information Technology
- The Most Outstanding Researcher of the Year 2003, in Information Technology and Communication, awarded by The National Research Council of Thailand
- Consolation Prize for "Thai Text to Speech Engine", awarded by Thai Research Council for Innovation in Science Technology and Industry section in 2002
- Researcher of the Year 2001, awarded by The Nation Newspaper
- 10 Best IT events of 2000, awarded by The Nation Newspaper to "ParSit" web-based machine translation service

Research Areas:
- Natural Language Processing (NLP)
- Machine translation
- Knowledge representation
- Interlingua (language intermediate representation)
- Corpus-based approach NLP
- Stochastic approach NLP
- Syntactic and morphological analysis
- Open source software activities
- Information retrieval/extraction
- Text summarization
- Web language engineering
- Social networking system
- Mobile application
- Data mining and big data

Present Academic and Professional Activities:
- Director (2006-present) Asia-Pacific Association for Machine Translation (AAMT)
- Executive Committee (2004-present) Asian Federation of NLP (AFNLP)
- Specialist (2001-present) W3C
- Specialist (2005-present) ISO/TC 37/SC 4 (Language resources management)
- Specialist (2005-present) ISO/IEC JTC 1/SC 34 (Document description and processing languages)
- Board member (2003-present) Asia Open Source Software Symposium (AOSS)

Academic Rank: Lecturer

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SCHOOL OF MANAGEMENT TECHNOLOGY

Dr. Aussadavut Dumrongsiri
Nationality: Thai

Education:
- Ph.D. Business Administration Operations Management, University of Washington, Seattle, WA, USA
- M.Sc. Industrial and Operations Engineering, The University of Michigan, Ann Arbor, MI, USA
- M.Sc. Electrical Engineering, Michigan State University East Lansing, MI, USA
- B.Eng. Electrical Engineering, Chulalongkorn University, Thailand

Research Areas:
- Operations management
- Supply chain management
- E-Business
- E-Word of Mouth
- Project management
- Inventory management
- Game theory
- Business competition

Academic Awards:
- Bertauche Endowment Fellowship, University of Washington, USA
- Evert McCabe Fellowship, University of Washington, USA

Present Academic and Professional Activities:
- Member of Institute for Operations Research and the Management Sciences (INFORMS)
- Member of Decision Science Institute (DSI)

Academic Rank: Assistant Professor
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Dr. Chawalit Jeenanunta
Nationality: Thai

Education:
- Ph.D. Industrial and Systems Engineering, Virginia Polytechnic Institute and State University, USA
- M.S. Management Science, University of Maryland, USA
- B.S. Mathematics, University of Maryland, USA
- B.S. Computer Science, University of Maryland, USA

Research Areas:
- Linear programming
- Integer programming
- Network optimization
- Simulation
- Supply chain management

Academic Awards:
- Development and Promotion of Science and Technology Talents Project (DPST) Scholarship, 1990-2004

Academic Rank: Associate Professor
E-mail: chawalit@siit.tu.ac.th
Dr. Morrakot Raweewan

**Education:**
- Ph.D. in Industrial Engineering, Clemson University, USA
- M.S. in Mathematics, Virginia Polytechnic Institute and State University (Virginia Tech), USA
- B.Sc. in Applied Mathematics, (2nd Class Honors) King Mongkut’s Institute of Technology Ladkrabang, Thailand

**Academic Awards:**
- Alpha Pi Mu Industrial Engineering Honor Society (since 2005)
- Royal Thai Government Scholarship, 1997-2003
- Bank of Thailand Scholarship, 1994-1995
- Thailand Science Academic Excellence Award, 1995
- ICI Company Limited Scholarship, 1991
- Selected nationally to present a science project at 1990 Asian Pacific Science Week, Singapore
- Young Creative Scientist of Thailand, 1989
- Best High School Science Project of Thailand, 1989

**Academic Rank:**
Assistant Professor

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**Research Areas:**
- Analysis of supply chain models
- Simulation modeling
- Applied optimization

---

Dr. Nattharika Rittippant

**Education:**
- Ph.D. in Strategic and International Management, The University of Texas at Arlington, USA
- M.M. in E-Commerce, University of Dallas, USA
- M.B.A. in International Business Management, University of Dallas, USA
- B.A. in Economics, University of Dallas, USA
- B.S. in Biology, University of Dallas, USA

**Academic Rank:**
Assistant Professor

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**Research Areas:**
- Entrepreneurial intentions
- MNE and international strategies
- Strategic management
- CSR

---

**Nationality:** Thai
Dr. Natsuda Kaothanthong

**Education:**
- Ph.D. Information Science, Tohoku University, Japan
- M.S. Information Science, Tohoku University, Japan
- B.S. Information Technology, Sirindhorn International Institute of Technology, Thammasat University, Thailand

**Research Areas:**
- Pattern Recognition
- Computer Vision
- Information Retrieval
- Data Mining
- Machine Learning

**Academic Rank:**
Lecturer

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Dr. Pisit Chanvarasuth

**Education:**
- Ph.D. Management Information Systems, Rensselaer Polytechnic Institute, USA
- M.S. Management Information Systems, Rensselaer Polytechnic Institute, USA
- M.B.A. Finance, Loyola University Chicago, Chicago, USA
- D.V.M. Doctor of Veterinary Medicine, Chulalongkorn University, Thailand

**Research Areas:**
- Information technology management
- Electronic business
- Supply chain management
- Outsourcing
- Management of organizational business processes

**Academic Rank:**
Assistant Professor

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Dr. Rujira Chaysiri

**Education:**
- Ph.D. (Systems Engineering), University of Virginia, USA
- M.S. (Operations Research), Columbia University, USA
- B.A. (Mathematics), University of Virginia, USA

**Academic Awards:**
Development and Promotion of Science and Technology Talents Project (DPST) Scholarship, 2001-2016

**Research Areas:**
- Systems Integration
- Nonlinear Systems
- Dynamical Systems and Control

**Academic Rank:**
Lecturer

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Dr. Ryoju Hamada

Nationality: Japanese

Education:
- Ph.D. Information Science, Tohoku University, Japan
- M.Sc. Information Science, Tohoku University, Japan
- L.L.B. Labor Law, Tohoku University, Japan
- Diploma Information Technology for Business Value, National University of Ireland, Ireland

Academic Awards:
- Best Poster Award, 45th International Simulation and Gaming Association (ISAGA) Annual Conference, 2014
- Best Paper Award, Japan Association of Simulation and Gaming, 2014

Present Academic and Professional Activities:
- Member, Editorial Committee, Japan Association of Simulation and Gaming, 2013-present
- Program Chair, 2nd annual conference of Japan Association of Simulation and Gaming, 2014
- Member, Editorial Committee, Japan Society of Security Management, 2006-2010

Academic Rank: Associate Professor

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Research Areas:
- Intellectual property
- Privacy
- Entrepreneurship
- Business Gaming

Dr. Suebsak Nanthavanij

Nationality: Thai

Education:
- Ph.D. Industrial Engineering, The University of Texas at Arlington, USA
- M.S. Industrial Engineering, The University of Texas at Arlington, USA
- B.S. Chemical Engineering, Chulalongkorn University, Thailand

Academic Awards:
- Distinguished Paper Award, 2014 International Symposium on Business and Management
- Best Paper Award 2012, World Business Research Conference (organized by World Business Institute)
- 2011 Best Teaching Award, Sirindhorn International Institute of Technology
- 2008 Best Teaching Award, Sirindhorn International Institute of Technology
- The Armstrong Maltbie Award for Excellence in Teaching, North Carolina State University, April 2006
- Outstanding Teaching Assistant Award, North Carolina State University, April 2005
- The Balaez-Ambrose Outstanding Mathematics Award, Methodist University, April 2002
- The Walter Clark Maximum Effort Award from the Reeves School of Business, Methodist University, April 2002

Present Academic and Professional Activities:
- Member, Editorial Committee, Japan Association of Simulation and Gaming, 2013-present
- Program Chair, 2nd annual conference of Japan Association of Simulation and Gaming, 2014
- Member, Editorial Committee, Japan Society of Security Management, 2006-2010
- Board member, Japan Society of Security Management, 2006-2010

Academic Rank: Associate Professor

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Research Areas:
- Industrial ergonomics
- Product and workstation design
- Industrial noise

Dr. Suthathip Suanmali

Nationality: Thai

Education:
- Ph.D. Mathematics, North Carolina State University, USA
- M.S. Applied Mathematics, North Carolina State University, USA
- B.S. Mathematics and Financial Economics, Methodist University, USA

Academic Awards:
- Outstanding Paper Award, 2014 International Symposium on Business and Management
- Best Paper Award 2012, World Business Research Conference (organized by World Business Institute)
- 2011 Best Teaching Award, Sirindhorn International Institute of Technology
- 2008 Best Teaching Award, Sirindhorn International Institute of Technology
- The Armstrong Maltbie Award for Excellence in Teaching, North Carolina State University, April 2006
- Outstanding Teaching Assistant Award, North Carolina State University, April 2005
- The Balaez-Ambrose Outstanding Mathematics Award, Methodist University, April 2002
- The Walter Clark Maximum Effort Award from the Reeves School of Business, Methodist University, April 2002

Present Academic and Professional Activities:
- Member, Editorial Committee, Japan Association of Simulation and Gaming, 2013-present
- Program Chair, 2nd annual conference of Japan Association of Simulation and Gaming, 2014
- Member, Editorial Committee, Japan Society of Security Management, 2006-2010
- Board member, Japan Society of Security Management, 2006-2010

Academic Rank: Assistant Professor

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Research Areas:
- Applied linear algebra
- Highway assets maintenance and management system
- Regional trade analysis
- Cross border trade facilitation
Dr. Thanwadee Chinda

Nationality: Thai–Australian

Education:
- Ph.D. Engineering Management, Griffith University, Australia
- M.Eng. Engineering Management, Griffith University, Australia
- B.Eng. Mechanical Engineering, King Mongkut's University of Technology Thonburi (KMUTT), Thailand

Academic Awards:
- Thammasat University Researcher Award, 2013
- "Master of Excellence 2002", Griffith University, Australia

Research Areas:
- Construction safety management
- Construction waste
- System dynamics modeling
- Structural equation modeling

Academic Rank: Associate Professor

E-mail: thanwadee@siit.tu.ac.th

Dr. Veeris Ammarapala

Nationality: Thai

Education:
- Ph.D. Industrial and Systems Engineering, Rutgers University, The State University of New Jersey, USA
- M.Sc. Operations Research, Columbia University, USA
- B.Eng. Industrial Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand

Academic Awards:
- Outstanding Research Award 2011, Thammasat University
- Outstanding Research Award 2010, Thammasat University
- Best Paper Award at the 8th International Conference on Information and Management Sciences (ICMIS 2009), Kunming, China, 2009
- Outstanding Research Award 2009, Thammasat University
- Outstanding Research Award 2008, Thammasat University

Research Areas:
- Decision support systems
- Risk management
- Transportation Maintenance Management System

Academic Rank: Assistant Professor

E-mail: veeris@siit.tu.ac.th
Dr. Bundit Limmeechokchai

**Education:**
- D.Eng. Energy Economics and Planning, Asian Institute of Technology (AIT), Thailand
- M.Eng. Energy Technology, Asian Institute of Technology (AIT), Thailand
- B.Eng. Mechanical Engineering, King Mongkut’s Institute of Technology North Bangkok (KMITNB), Thailand

**Academic Rank:** Associate Professor

**E-mail:** bundit@siit.tu.ac.th

**Research Areas:**
- Energy efficiency, economics, planning and policy
- GHG mitigation
- Modeling of energy and environment systems
- Low-carbon technologies

Nationality: Thai

Dr. Chung-Hao Hsu

**Education:**
- Ph.D. Mechanical Engineering, Texas A&M University, USA
- M.S. Applied Mechanics, National Taiwan University, Taiwan
- B.S. Mechanical Engineering, National Chung Cheng University, Taiwan

**Academic Rank:** Lecturer

**E-mail:** chung-hao@siit.tu.ac.th

**Research Areas:**
- Nano energy with application in renewable energy technologies and thermal management of integrated circuits (IC)
- Materials sciences and engineering
- Nanotechnology fabrication
- Mechanical design and automotive engineering
- Finance theory in technology management

Nationality: Taiwanese
Dr. Jirachai Buddhakulsomsiri

**Education:**
- **Ph.D.** Industrial Engineering, Oregon State University, USA
- **M.S.** Statistics, Oregon State University, USA
- **M.S.** Industrial Engineering, Oregon State University, USA
- **B.Eng.** Chemical Engineering, Chulalongkorn University, Thailand

**Research Areas:**
- Applied operations research
- Data mining
- Production planning and control
- Systems simulation
- Engineering economics analysis
- Logistics and supply chain management

**Academic Rank:** Associate Professor

**E-mail:** jirachai@siit.tu.ac.th

Dr. Narameth Nananukul

**Education:**
- **Ph.D.** Operations Research and Industrial Engineering, University of Texas at Austin, USA
- **M.S.** Industrial Engineering, Texas A&M University, USA
- **M.Eng.** Electrical Engineering, Chulalongkorn University, Thailand
- **B.Eng.** Electrical Engineering, Chulalongkorn University, Thailand

**Academic Awards:**
- Cullen Trust for Higher Education Endowed Professorship in Engineering Fellowship, University of Texas at Austin, 2006-2007
- Graduate School Continuing Fellowship, University of Texas at Austin, 2007-2008

**Research Areas:**
- Business Intelligence
- Inference and Data Mining
- Decision Support System
- Optimization in Supply chain
- Energy System and Online Advertising
- Quality Management

**Present Academic and Professional Activities:**
- Reviewer, Journal of Applied Mathematical Modelling
- Member, The Institute for Operations Research and the Management Sciences (INFORMS)

**Academic Rank:** Assistant Professor

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Dr. Navee Chiadamrong

**Education:**
- **Ph.D.** Manufacturing Engineering and Operations Management, The University of Nottingham, UK
- **M.Sc.** Engineering Business Management, The University of Warwick, UK
- **B.Eng.** Industrial Engineering, Chulalongkorn University, Thailand

**Research Areas:**
- Cellular manufacturing systems (CMS)
- Advanced manufacturing systems
- Systems simulation
- Production planning and control
- Supply chain management

**Academic Rank:** Associate Professor

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<td><strong>Education:</strong></td>
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<tr>
<td>M.Eng. Industrial Engineering and Management, Asian Institute of Technology (AIT), Thailand</td>
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<td>B.Eng. Production Engineering, (1st Class Honors) King Mongkut's Institute of Technology North Bangkok (KMITNB), Thailand</td>
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<tr>
<td><strong>Research Areas:</strong></td>
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<tr>
<td>• Production and Inventory control (P&amp;IC) systems, JIT, MRP, and TOC</td>
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<td>• P&amp;IC systems for Thai industries</td>
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<td>• P&amp;IC in supply chain</td>
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<td>• Applied operations research</td>
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<td>• Systems simulation</td>
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<tr>
<th>Dr. Satha Aphornratana</th>
<th>Nationality: Thai</th>
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<td>Professor</td>
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<tr>
<td><strong>Education:</strong></td>
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<tr>
<td>Ph.D. Mechanical Engineering, The University of Sheffield, England</td>
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<tr>
<td>B.Sc. Mechanical Engineering, Prince of Songkla University, Thailand</td>
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<tr>
<td><strong>Research Areas:</strong></td>
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<tr>
<td>• Refrigeration systems</td>
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<tr>
<th>Dr. Suchada Rianmora</th>
<th>Nationality: Thai</th>
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<tr>
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<td>Assistant Professor</td>
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</tr>
<tr>
<td><strong>Education:</strong></td>
<td></td>
</tr>
<tr>
<td>D.Eng. Design and Manufacturing Engineering, Asian Institute of Technology (AIT), Thailand</td>
<td></td>
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<tr>
<td>M.Eng. Industrial Production Technology, Kasetsart University, Thailand</td>
<td></td>
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<tr>
<td>B.Eng. Industrial Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand</td>
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<tr>
<td><strong>Research Areas:</strong></td>
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<tr>
<td>• Structured light system-based selective data acquisition</td>
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<td>• Reverse engineering</td>
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<tr>
<td>• Application of image processing in manufacturing process</td>
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<tr>
<td>• Adaptive layered manufacturing</td>
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<tr>
<td>• CAD/CAM</td>
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</tbody>
</table>
Dr. Sun Olapiriyakul

**Education:**
- Ph.D. Industrial Engineering, New Jersey Institute of Technology (NJIT), USA
- M.S. Industrial Engineering, San Jose State University, USA
- B.Eng. Mechanical Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand

**Academic Awards:**
- Best Presentation Award at the 5th KKU International Engineering Conference (KKU-IENC), 2014
- Doctoral Scholarship in Nanotechnology awarded by the Office of the Higher Education Commission (OHEC), 2005

**Research Areas:**
- Industrial Ecology
- Sustainability of Supply Chain Networks

**Academic Rank:** Lecturer

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---

Dr. Supachart Chungpaibulpatana

**Education:**
- D.Eng. Energy Technology, Asian Institute of Technology (AIT), Thailand
- M.Eng. Energy Technology, Asian Institute of Technology (AIT), Thailand
- B.Sc. Mechanical Engineering, Prince of Songkla University, Thailand

**Academic Awards:**
- Gold Medal Award 2014, Taipei International Invention show & Technomart
- Very Good Research Award 2006, Thammasat University
- Thailand’s Young Scientist Award 2002, Foundation for the Promotion of Science and Technology under the Patronage of His Majesty the King, Thailand
- The Award-Winning Book of Thammasat University, Dynamic Systems and Control, 2002

**Research Areas:**
- Thermal engineering
- Solar energy
- Energy conservation and management
- Energy policy and planning

**Academic Rank:** Associate Professor

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Dr. Thananchai Leephakpreeda

**Education:**
- Ph.D. Industrial Engineering, New Jersey Institute of Technology (NJIT), USA
- M.S. Industrial Engineering, San Jose State University, USA
- B.Eng. Mechanical Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand

**Academic Awards:**
- Best Presentation Award at the 5th KKU International Engineering Conference (KKU-IENC), 2014
- Doctoral Scholarship in Nanotechnology awarded by the Office of the Higher Education Commission (OHEC), 2005

**Research Areas:**
- Process control and modeling
- Robotics
- Expert control systems
- Neural networks and fuzzy logics
- System identification
- Numerical simulation and optimization

**Academic Rank:** Professor

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Dr. Thunyaseth Sethaput

**Academic Rank:** Lecturer

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**Education:**
- **Ph.D.** Systems and Control Engineering, Case Western Reserve University, Ohio, USA
- **B.Eng.** Mechanical Engineering, Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand

**Research Areas:**
- Systems Biology
- Biomedical Mechanics
- Neurosurgical Systems
- Cardiovascular Systems
- Simulation Modeling
- Signal Analysis
- Computational Fluid Dynamics (CFD)

**Nationality:** Thai

Dr. Vladimir I. Kuprianov

**Academic Rank:** Professor

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**Education:**
- **D.Eng.** Steam Boilers and Steam Generators, Moscow Power Engineering Institute (MPEI), Russia
- Honors Diploma of Engineer (Equiv. to BEng & MEng in Mechanical Engineering), MPEI, Russia

**Academic Awards:**
- Outstanding Research Award 2015, Thammasat University

**Research Areas:**
- Thermal power plants
- Boiler and furnace technology
- Combustion and emission control in boilers fired with fossil fuels
- Fluidized-bed combustion (FBC) of biomass residues and wastes
- Assessment of environmental impacts by thermal power plants and FBC systems

**Nationality:** Russian
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Department of Common and Graduate Studies English Training Unit

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Advanced Certificate in Policing, Northern Territory University, Australia.
TESL/TEFL Certificate, TEFPLplus Teaching Training, Patong Language School, Phuket, Thailand.
M.Ed. Teaching Second Languages, University of Southern Queensland, Australia.
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M.Sc. Psychology, Institute of Psychology, University of Aarhus, Denmark.
B.A. Psychology, University of Iceland, Reykjavik, Iceland.

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Michael C. Lichtenstein
TESOL Certificate, Teaching English to Speakers of Other Languages, Chiang Mai University, Chiang Mai, Thailand.
B.A. Asian Studies, State University of New York at Stony Brook, Stony Brook, NY, USA.

Paul V. Neilson
M.S. Chemistry, California Institute of Technology (CALTECH), USA.
B.S. Chemistry, California Polytechnic State University (SLO), USA. (with highest honors)
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TESOL Teaching English to Speakers of Other Languages, Payap University, Chiang Mai, Thailand.
B.A. Management Information System, Armstrong University, Berkeley, CA, USA.

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M.Sc./M.A. in Global Media and Communication (double degree), London School of Economics and Political Science, London (UK) and Fudan University (China)
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M.Sc. Mahidol University, Bangkok, Thailand
B.Sc. Mahidol University, Bangkok, Thailand

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B.Eng. Khon Kaen University, Thailand

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Ph.D. University of Illinois, Chicago, USA
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B.Sc. Mahidol University, Thailand

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B.Eng. Chulalongkorn University, Bangkok, Thailand.

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B.S. La Trobe University, Melbourne, Australia

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M.S.E.E. Florida Institute of Technology, USA
B.Eng. King Mongkut’s Institute of Technology Ladkrabang, Bangkok, Thailand

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B.Eng. Thammasat University, Thailand

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B.Eng. Chulalongkorn University, Bangkok, Thailand

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B.S. Thammasat University, Thailand

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Ph.D. University of New Castle, Australia
M.Sc. National University of Singapore, Singapore
M.B.A. Brunel University, UK
M.Bus. RMIT University, Australia
B.E. The University of Singapore, Singapore
B.Bus. RMIT University, Australia

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B.Sc. University of Rochester, Rochester, NY, USA

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B.Eng. (Honors), Kasetsart University, Thailand

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