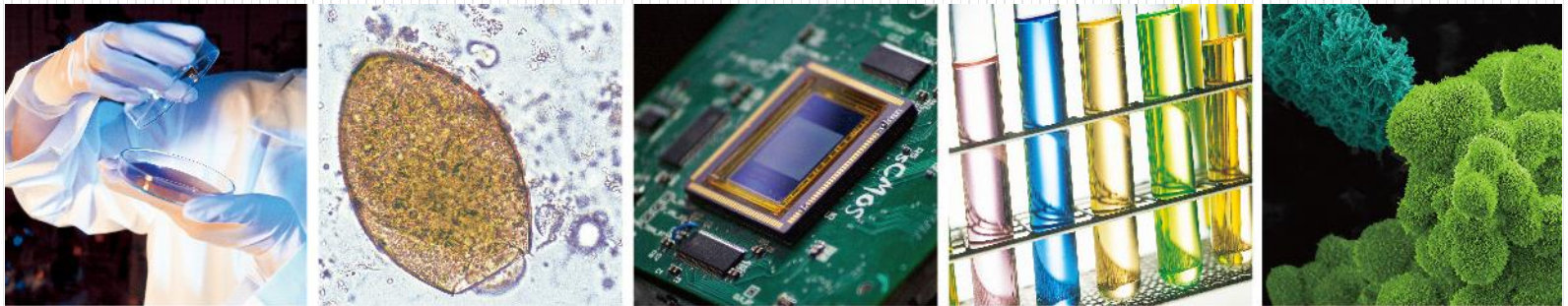


天主教輔仁大學理工學院

College of Science and Engineering

Fu Jen Catholic University



Dr. Yuan-Kai Wang
Director of Applied Science and Engineering
Associate Dean for Academics

History of CSE

The College of Science and Engineering (CSE) was founded in **1963** with the great efforts of **the Fathers of SVD** (Societas Verbi Divini)



Fr. Richard Arens
First Dean of CSE



Fr. Heinz Hesselfeld



Fr. Franz Huber



Fr. Budenholzer Frank



The first building of CSE

Overview of the CSE

Six departments offering bachelor and master degrees

- Mathematics
- Life Science
- Physics
- Electrical Engineering (EE)
- Chemistry
- Computer Science and Information Engineering (CSIE)

Institute and Department for Ph.D. degree

- [Dept. of Chemistry](#)
- [Graduate Institute of Applied Science and Engineering \(ASE\)](#)

Full time faculty : 95

Undergraduate students: 2739

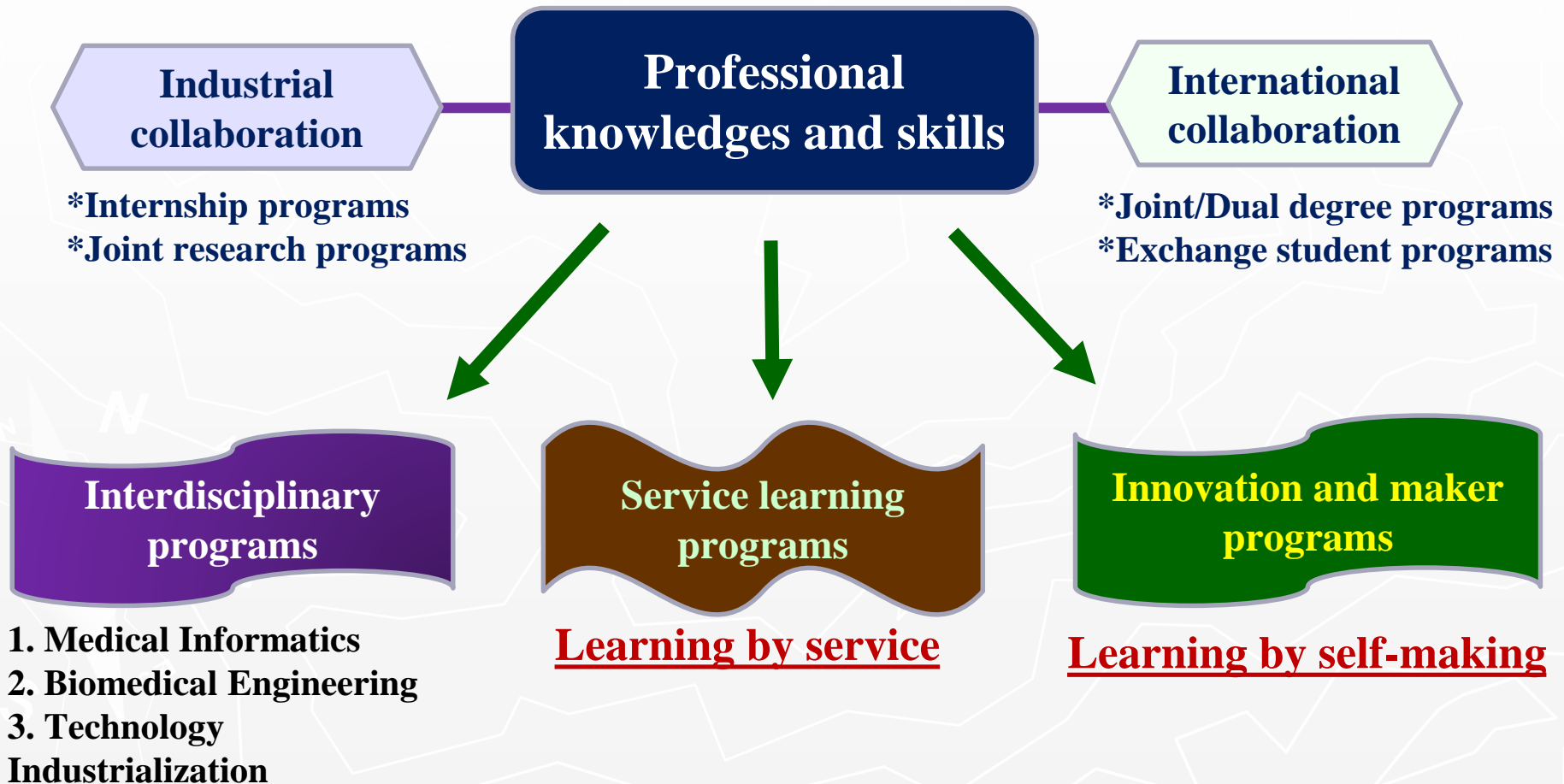
Graduate students (M.S.): 227

Graduate students (Ph.D.): 43

3,009



Features of Education in CSE



Industrial and International Collaboration

● Partnership with Industrial Sectors

- *Lectures from industry
- *Internship for students
- *Joint research projects



● International Exchange and Collaboration

- *Joint/Dual Degree Programs
 - 3+2: Georgetown University
 - 4+1: The Catholic University of America (CUA)
- *Overseas Learning
 - CUA summer program
- *Exchange students overseas
 - FJCU has about 270 partner universities worldwide



Interdisciplinary Programs

Programs for interdisciplinary education

Biology (medical) + EE + CS + other fields

Two bachelor degree programs:

- **Medical Informatics and Innovative Applications**
- **Software Engineering and Digital Innovation Applications**
(evening school)

Course modules with special focus, including

- **Biomedical Engineering Program**
- **Technology Industrialization**
- **etc.**





Service Learning

Many students of CSE join online tutoring project to teach kids in remote areas.



Groups for after-school learning

=> Children's home for orphans

=> Local elementary school

=> Overseas: e.g. Philippines (Cebu),

Mongolia



Innovation and Maker Programs

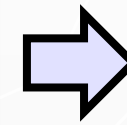
Learning by self-making



Training in **App, 3D printing, robot control, etc**

+

Professional knowledges



Newly designed products



SF305 Maker space
for training and discussion



514 Maker space
for design & manufacturing



Two Major Projects in Progress

**Construction of a new
CSE building**



The Advanced Laboratories for the
College of Science and Engineering

**Recruitment of international
students for Ph.D. and Master
degree programs**



New CSE building

Why a new building?

1. The current building is more than 50 years, and most facilities are out-of-date.
2. The number of faculty and students is more than doubled.



Cost: US\$ 15 million

- (1) 8.4 million from the University
- (2) 6.6 million from fund-raising



Thank more than 650 alumni for their donations

The construction will start in Dec. 2018 or the near future.



International Students

Thanks to Fr. James's help and support

Ph.D. programs: 5 students

- 4 from India
- 1 from Philippines (San Carlos University)

Master program: 2 students

- 1 from Japan, 1 from Philippines

Bachelor program: 5 students

- 3 from Malaysia, 1 from Viet Nam, 1 from USA

**Visiting USC for recruitment
in 2016**



PhD Programs in FJU

- [Applied Science and Engineering \(ASE\)](#)
- **Chemistry**
- Pharmaceutical Biotechnology
- Nutrition and Food Science
- Business Administration
- Chinese Literature
- Philosophy
- Cross-Culture Studies
- Law



PhD Program in Chemistry



PhD Program in Chemistry

1. Faculty : 17 faculty members (all with Ph.D. degree)

- Organic Chemistry : 5
- Inorganic Chemistry : 3
- Physical Chemistry : 3
- Analytic Chemistry : 3
- Material Chemistry : 3

2. Instruments:

- (1) Shared instruments : Powder X-ray, Thermal Analysis (TGA, DSC, DMA), GPC, Microwave reactor, FT-IR, NMR, UV-Vis spectroscopy, PL spectroscopy, HPLC, GC, MP-AES, CV, AA, Contact angle measurement, Capillary Electrophoresis, pH meter, refrac
- (2) Lab. instruments: LC-MS-MS, HPLC(x6), Transient absorption lifetime measurement, UV-Vis. spectroscopy (x2), Raman spectroscopy, Clusters for computer simulation, CV (x6), Lithium battery assembly and test equipments, Universal mechanical testing machine, Sonicator (x3), Freeze-dryer (x2), Thermal spray dryer, Thermal evaporator, Impedence analyzer, 4-points probe (x2), particle size analyzer

| | | | |
|----------------------|--|----------------------|---|
| Dr. Gon-Ann Lee | Professor | Organic Chemistry | high strain ring compounds [cyclopropenes, calix[4]arenes, and metal cyclopropenes] |
| Dr. Che-Chien Chang | Associate Professor | Organic Chemistry | total synthesis of natural products / development of synthetic methodologies/ enzyme inhibitors/ agonists/ antagonists/ carbohydrate chemistry |
| Dr. Heau-Shan Gao | Assistant Professor | Organic Chemistry | peptide chemistry |
| Dr. Chien-Sheng Chen | Assistant Professor | Organic Chemistry | chemical biology/ functional carbohydrate chemistry |
| Dr. Wei-Min Liu | Assistant Professor | Organic Chemistry | Organocat. for asymmetric synthesis/molecular probe for biology application |
| Dr. Hui-Ling Lee | Professor | Analytical Chemistry | microchip electrophoresis in biomedical and environmental analysis/ electro-analytical chem./ liquid chromatography mass spectrometry for small molecules and metabolomics. |
| Dr. Mao-Huang Liu | Associate Professor | Analytical Chemistry | electrochemistry/ lithium ion battery/ vanadium redox flow battery |
| Dr. Tsung-Ting Shih | Assistant Professor | Analytical Chemistry | microanalysis/ microanalysis system design/ trace analysis of metal ion/ material analysis |
| Dr. Wen-Shyan Sheu | Professor | Physical Chemistry | theoretical chemistry/ computational chemistry |
| Dr. Hsiao-Ching Yang | Associate Professor | Physical Chemistry | chemical physics of networked complex systems, nanoscale assembly processes, interactions at interfaces and site, the structure and dynamics function of signaling membrane proteins, and the physical, mechanical and electronic properties of nanostructured molecular-based materials. |
| Dr. Ching-Ping Liu | Assistant Professor | Physical Chemistry | nanogold quantum dot for energy transfer and biosensor/ nanogold for photo-thermal therapy/ nanogold for catalytic and biology application |
| Dr. Yen-Hsiang Liu | Professor | Inorganic Chemistry | single crystal XRD analysis/ crystal engineering/ metal-organic frameworks (MOF)/ functional magnetic-, luminescent-coordination polymers. |
| Dr. Yuan-Jang Chen | Associate Professor | Inorganic Chemistry | photo-induced electron transfer of transition mono-/multi-metal complexes |
| Dr. En-Che Yang | Associate Professor | Inorganic Chemistry | magnetic metal complexes/ single molecule magnets |
| Dr. Win-Long Chia | Associate Professor | Material Chemistry | liquid crystal |
| Dr. Ping-Tsung Huang | Associate Professor (Chairman, Chem Dep.) | Material Chemistry | polymer synthesis/ polymer blends/ organic semiconductors/ nano materials/ polymer nonocomposites |
| Dr. Yuan-Hsiang Yu | Associate Professor | Material Chemistry | polymer-graphene nanocomposites/ functional molecules/graphene hybrid materials/ anti-corrosive coatings/ electrospinning nanofibers/ gas barrier/ gas separation membranes/ counter electrode materials for dye sensitized solar cells/ electrochemical sensors/ conductive films/ opto-electronics materials. |

Scholarship for foreign students:

1. tuition waived for Ph.D. study
2. 5000 NTD/month from department
3. advisor projects (please ask for detail information)
4. school funding (please ask for detail information)

Requirements for Ph.D. graduation:

1. Course credits: 28 credits (core courses - 9 credits / elective courses - 9 credits/ colloquium and research – 8 credits/ thesis – 2 credits)
2. Qualify exams – 5 points in 3 years
3. Independent proposal
4. 2 journal papers (SCI Indexed)
5. Dissertation

| | Organic Chem. | Inorganic Chem. | Physical Chem. | Analytical Chem. | Material Chem. |
|------------------|--|---|---|---|---|
| Core-courses | Special Topics in Organic Chemistry (I), (II), (III) | Special Topics in Inorganic Chemistry (I), (II), (III) | Special Topics in Physical Chemistry (I), (II), (III) | Special Topics in Analytical Chemistry (I), (II), (III) | Special Topics in Polymer Chemistry (I), (II), (III) |
| Elective-courses | <ul style="list-style-type: none">- Adv. Org. Chem. (I)- Adv. Org. Chem. (II)- Org. Spectral Analysis- NMR Spectroscopy- Metal-organic Chem. | <ul style="list-style-type: none">- Adv. Inorg. Chem.- Organometallic Chem.- Inorg. Synth. & Analysis- Solid State Chem. & Diffraction Analysis- Electron-transfer Applications | <ul style="list-style-type: none">- Photophysics & Photochemistry- Chemical Kinetics- Quantum Chem.- Surface Chem.- Statistical Mechanics- Computational Chem. | <ul style="list-style-type: none">- Intermed. Analytical Chem.(I)- Intermed. Analytical Chem.(II)- Intermed. Analytical Chem.(III)- Electrochemistry | <ul style="list-style-type: none">- Introduction to polymer science- Polymer Chem.- Physical Properties in Polymer- Introduction to Material Science- Introduction to LCD Display- Introduction to organic solar cells |



Graduate Institute of Applied Science and Engineering (ASE)

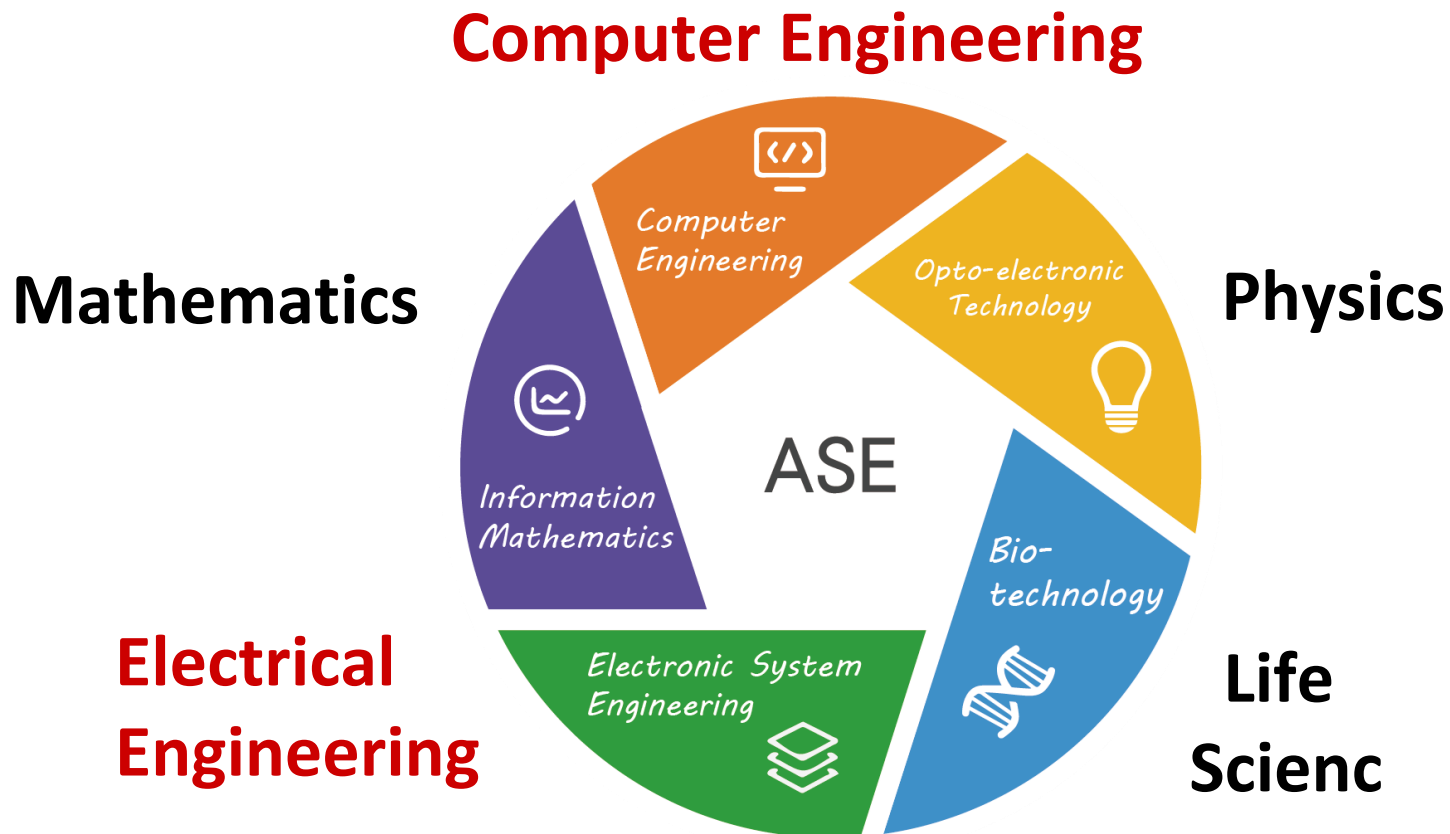
Yuan-Kai Wang, PhD

Professor in *Electrical Engineering Department*
Researcher in *Computer Vision & Artificial Intelligence*

Director of *Graduate Institute of ASE*
Associate Dean of *College of Science and Engineering*

ASE

- Established in 2002
- Developed with 5 research fields (departments)



Current Status of ASE

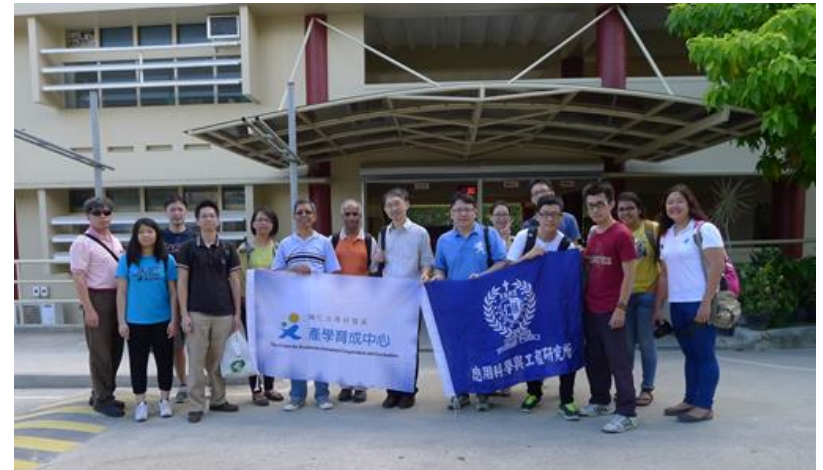
- **Faculty**
 - About 80 full-time faculty members (from the 5 departments)
- **Students**
 - 35 graduated PhD (one international student)
 - 47 PhD students (five international students)



International Collaboration



Tokyo University



San Carol University

USC viterbi school of engineering
Supersonic Transducer Center



Asian Symposium on Microbial Ecology



International Students



Activities



Scholarship

- **Outstanding students are eligible for financial sponsoring by**
 - **Taiwan Government**
 - Taiwan Scholarship Program
 - The New Southbound Talent Development Program
 - **Fu Jen Catholic University**
 - New International Students in Doctoral Degree Programs
 - **SVD (Societas Verbi Divini)**

How to Join ASE

- **Application**
 - Fall 2019 admission is open in **January 15** at <http://admission.oie.fju.edu.tw>
 - Apply online and submit required documents
- **Requirements**
 - Certificate or diploma of master degree in science and engineering, especially for
 - Electrical Engineering, Computer Science and Information Engineering, Mathematics, Physics, Life Science
 - Language: English, Chinese
 - Research capability
- **Online interview may be necessary**

Climbing Peak in Academics





Thank you very much!

