Department of Electrical Engineering (EE)  
National Chung Cheng University, Taiwan

- One of the best institutes in Taiwan for the education and training of professionals in Electrical Engineering.
- The research emphases include: low-power/low-voltage system-on-chip (SoC), intelligent home robots, intelligent and high-quality multimedia processing, smart grids, renewable energy, power electronics, and electro-magnetic transceivers as wearable devices for home care application.
- Visit our website at http://www.ee.ccu.edu.tw/main.php. We want you!!
- Programs and Establishment
  - MS Program: since August 1990
  - BS Program: since August 1992
  - PhD Program: since August 1993
- Position in Taiwan EE’s
  - Public university
  - First-tier research-oriented EE Department

### Computer Engineering Group
Artificial intelligence, Computer vision, Robot vision, Humanoid robots, Robotic control, Software engineering, Mobile robots, Intelligent vehicles, Intelligent transportation system, Human-computer interaction, Embedded system, Intelligent agents

We develop intelligent systems, including artificial intelligence and computer vision. A number of industry and government funded projects are available for student support.

### Electrical Power, Renewable Energy, and Power Electronics Group
Smart grid design, Renewable energy integration, Power system analysis, Power quality, Energy economics and management, Control systems, Mechatronics integration, Electric motor drives, Power electronics.

This group has many government and industry-university collaboration projects, and often joins the competition and gets many rewards. This group provides high scholarship to postgraduates from foreign countries, and welcomes international students to join us.

### Signal Processing and Multimedia Communication Group
Digital video broadcast, 3D audio/video, 3DTV, 3D depth camera, Computer vision and pattern recognition, Biomedical signal processing and diagnosis, Computer-brain interface, Video surveillance, Video compression/networking, Visual/audio recognition for smart home, Big data analysis for video, Intelligent transportation system.

We have many government and industry-university projects to support RA scholarships. We have several international students and offered many English-taught courses.

### System-on-Chips Group
Designs for IoT: (1) Low-power & ultra-low-voltage micro-controller, memory, ADC/DAC, and power management SoC, (2) Sensor interface, transducer, and energy harvesting, (3) EDA for analog circuit, low-power digital, and variation-resilient design.

You can learn how to design integrated circuits: algorithm development, function verification by CAD tools, implementation and measurement. This group publishes many papers in prestigious international conferences/journals (e.g. ISSCC, JSSCC).

### Electromagnetic Techniques and Integrated Systems Group
Micro-millimeter wave transceiver ICs and integrated devices, 5G massive antenna transceiver systems, electromagnetic(EM)-wave propagation and characterization, EM vital signal detection, EM micro-positioning for medical surgery and intelligent machining.

You will learn hand-on skills and knowledge in microwave and millimeter-wave ICs, array beamforming, and radar applications. Our students have been the winners in top international design competitions (e.g., IEEE IMS, EMC, and APMC) since 2008.
Ranked within the first 5% in all Computer Science Departments in Taiwan!
Research emphases include: networking, cloud computing, big data, internet-of-things, cyber-physical systems, systems-on-chip, multimedia signal processing such as medical signal processing, biometric authentication.
Welcome to visit department website http://www.cs.ccu.edu.tw/.

### System-on-Chip and Embedded Systems Group
SoC design, embedded systems design, low-power optimization, program optimization, hardware-software cosimulation, ultra-low voltage MPU design, multicore processor design, real-time indoor locating, mixed-signal IC design, all-digital phase-locked loop
*We are focused on the core technologies for System-on-Chip and embedded system design. There are numerous collaborations between the industry and this group.*

### Networks & E-Learning Group
*We emphasize on the research of the latest technologies in networking and e-learning. We are currently conducting several large government and industry-university collaboration projects.*

### Computation Theory Group
Machine learning, keyword auction, computational artificial intelligence, bioinformatics, NUCloud, information system design, algorithm design, visualization for social networks, creative intelligence.
*We are devoted to the basics of computation theory, including artificial intelligence and social networks. Our contributions have won several best paper awards in major conferences.*

### Systems and Software Group
Cyber-physical systems, smart traffic design, smart grid optimization, smart home, reconfigurable systems, temporal-spatial data processing, compiler, fast boot technology, software testing, Chinese medicine diagnosis and information system design.
*We are focused on the core technologies for system design, including the world-famous fast boot technology developed by this group. We have several core technology transfers to the industry and very good academic contributions in terms of system design.*

### Multimedia Signal Processing Group
Target tracking using multiple video cameras, retinal vascular tree reconstruction, aesthetic perception, rhythm of motion extraction and cross-media alignment, multi-exposure image fusion, optical imaging, remote sensing, face recognition, human action analysis.
*We are focused on the main technologies in multimedia signal processing. We have several industrial collaborations and long-term research projects. Students will receive complete training in multimedia signal processing techniques.*
The Department of Communications Engineering at National Chung Cheng University was established in 1999, in which the MS program was first initiated. The BS and PhD programs were later launched in 2003 and 2006, respectively. We are the only Communications Department that offers complete BS, MS, and PhD programs among all the national universities of southern Taiwan, and has already been recognized as a domestic leader in several fields.

The Department of Communications Engineering fosters a vigorous academic environment in both education and research. Our mission is to produce highly qualified graduates with solid backgrounds in the area of communications engineering in order to accommodate the demands from both the academia and industry. We currently have 300 students and 19 tenure-tracked faculty members (all have PhD degrees) researching in the following two major research areas: **Communications Systems and Communication Networking**. Students are expected to receive thorough training in the whole spectrum of the communications technology, and become leaders in their chosen career after graduation.


---

**Communications Systems**

5G Mobile Communications Systems, Spread Spectrum Communications, Error Correction Codes, Personal and Mobile Communications, Multi-user Detection, Orthogonal Frequency Division Multiplexing, Baseband Transceiver Design, Multiple-Input-Multiple-Output (MIMO) Communications

*CCU Communications Systems Group aims at developing new wireless strategies and signal processing algorithms fostering reliable high-speed communications. Some of our ongoing research projects include 5G massive antenna systems, baseband transceiver architectures design, and advanced coding schemes for communications and video applications. Our team is the first one that initiates the university-industry project in 5G research issue in Taiwan.*

**Communication Networking**


*The Communication Networking Group has an eye toward investigating effective solutions of heterogamous networks in autonomous and dynamic environments. Our present focus areas include, but are not limited to, routing, wireless network, QoS, multicasting, security and privacy, optical network, network optimization, Internet of things and applications. Each of CNG professors leads a research laboratory, and they cooperate in close relationship on particular focus areas/projects sponsored by Taiwan Government or private companies.*
Our research and development are prepared for careers in mechanical engineering, develop lifelong learning skills, and advance the science and technology of mechanical engineering through multidisciplinary research in selected focus areas. There are four Interdisciplinary Research Centers and three advance research laboratory in our department. All of the research centers have been integrated as part of the core sites of the research institute of CCU AIM-HI (The Advanced Institute for Manufacturing with High-tech Innovations).

Scholarships

The Faculty of Mechanical Engineering provides RA (research assistant) and TA (teaching assistant) for both domestic and international outstanding graduate students. Part of this support may include research grant support, external scholarship support from Industry, and Graduate Teaching Assistantships.

Carrier

Mechanical engineering graduates with M.S. degree are sought in almost all sectors of the industry. Our graduates are especially recognized as highly qualified engineer who possesses solid academic knowledge as well as technical capability.

Earning your graduate degree in ME CCU is a promise to your carrier as mechanical engineer. Make a right decision in investing in your future -- join us at ME CCU.

Make a right decision in investing in your future! Join us now!
Department of Chemical Engineering of NCCU is a well-established research institute in Taiwan. Research projects are mostly granted from Ministry of Science & Technology and Ministry of Economic Affair of Taiwan, and from private industrial sectors such as Taiwan Petroleum Corp., Formosa Plastics, Industrial Technology Research Institutes (ITRI), etc. The department has received the significant annual industrial research and academic research awards from the respective Chemical Engineering Society (Outstanding Academic Research Award) and from Polymer society (Industrial Technology Award) of Taiwan in 2015. In addition, two of the faculty members have received the respective Outstanding Research Award and the Young Scholar Award of NCCU in 2015. Currently, the department has 13 full time (10 professors, 2 associate professors and 1 assistant professor) faculty members and received 25 research grants in the 2015/2016 fiscal year. Graduate students enrolled in the department have the opportunity to participate in various areas of research and career training depending on the projects received by their respective research advisers. Despite this, the department has built up its established research strength and main focus in the following areas:

Research Interests:

- Pursuing advanced technologies in bio-technologies, including fermentation, enzyme reactions, separation & purification of bio-products, and recombination of industrial micro-organisms.
- The automation of chemical processes, including intelligent process control, robust multivariable process control, process diagnosis and their applications in catalytic distillation column.
- The development of new catalysis technologies for selective syntheses of high purity fine chemicals, which have great demand in Taiwan’s electronic and petrochemical industries.
- The synthesis of precision polymers, organic-inorganic hybrids, optoelectronic polymers, and viscoelastic polymeric materials.
- The development of key technological for uses in the syntheses of new alloys for electronic, metallurgical and solder applications.
- Simulation, optimization and analyses of a chemical processes and the rheology of a polymeric fluid to achieve debottleneck in an industrial production line.
- The development of technological break-through in the syntheses and applications of nanomaterials, including carbon nanotubes, metal nanoparticles and nanorods.
- The development of the key material technologies, including the synthesis of fine ceramics, optoelectronic materials and high performance engineering plastics for use in Electronic and semi-conductor industries.
Witnessing a rapidly increasing need of engineers with not only a particular domain expertise but also possessing diverse interdisciplinary skills, the National Chung Cheng University founded its Graduate Institute of Opto-Mechatronics on August 1st, 2001. Its mission is to educate engineers with integrated multidisciplinary knowledge encompassing mechatronics, precision machining and manufacturing, opto-electronics, MEMS (micro-electromechanical systems), and nanotechnology.

**Introduction**
- The institute is the first graduate institute of Opto-Mechatronics in Taiwan.
- The institute has been accredited by the Institute of Engineering Education of Taiwan (IEET) since 2009.
- The Institute has been advanced by faculty members’ involvement in international academic organizations.

**Research direction**
- Advanced lighting and display technologies
- Micro- and nano-opto-electro-mechanical technologies

**Educational goal**
- Educating students with scientific and technical knowledge in multidisciplinary
- Fostering creativity and innovation in opto-mechatronics engineering students
- Educating students with engineering ethics and responsibility for the society
- Enhancing student’s global and sustainability views

**Faculty**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Research Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Li, Yuan-Yao</td>
<td>Professor (Chairman)</td>
<td>Nano-materials manufacture, Optoelectronic display components, Semiconductor manufacturing process, Solar cells, and Fuel cells.</td>
</tr>
<tr>
<td>Wang, Ching-Wu</td>
<td>Professor</td>
<td>Organic and inorganic electroluminescent devices and displays, Solar cells, and Optoelectronics engineering.</td>
</tr>
<tr>
<td>Wang, Hsiang-Chen</td>
<td>Professor</td>
<td>Optoelectronic semiconductor materials and devices, Solid state lighting, Optical system design, Ultrafast laser spectroscopy, Color engineering, Color image recognition system.</td>
</tr>
<tr>
<td>Hsu, Chia-Chen</td>
<td>Professor</td>
<td>Optical physics, Laser physics, Nonlinear optics, Polymer optics, and Nano-optoelectronics.</td>
</tr>
<tr>
<td>Tsai, Meng-Shiu</td>
<td>Professor</td>
<td>Smart Materials and Structures, Vibration Control, Acoustics Control, Robust Control</td>
</tr>
<tr>
<td>Tsiang, Chien-Chao</td>
<td>Professor</td>
<td>Synthetic Polymer Chemistry, Polymer processing, Keidanren copolymer, Polymer nanocomposites, Thermoplastic rubber, Polymer light-emitting diodes, and Organic-inorganic hybrid polymer</td>
</tr>
<tr>
<td>Wei, Tai-Huei</td>
<td>Professor</td>
<td>Nonlinear physics and Phototronic physics.</td>
</tr>
<tr>
<td>Ting, Chu-Chi</td>
<td>Associate Professor</td>
<td>Graphene composite materials, ZnO nanorods, Visible and IR quantum dots, and Down and up-conversion Fluorescence nanomaterials.</td>
</tr>
<tr>
<td>Hsieh, Ya-Ping</td>
<td>Associate Professor</td>
<td>Optoelectronic semiconductor materials and devices, Nano-phototronic materials, and Manufacturing and detection of carbon nanotubes and graphene components.</td>
</tr>
<tr>
<td>Lu, Ming-yen</td>
<td>Associate Professor</td>
<td>Nanodevice for optoelectric and energy applications, Dynamic study of material junctions, Synthesis of nanostructures, and Advanced electron microscopy analysis.</td>
</tr>
<tr>
<td>Liu, Chien-Sheng</td>
<td>Associate Professor</td>
<td>Scanner for 3D printer, Laser-based Auto-focusing Module, Applications of Cell Phone Camera Modules, Opto-electronics Sensing, Pulse Laser Photography</td>
</tr>
<tr>
<td>Yu, Gwo-Ruey</td>
<td>Associate Professor</td>
<td>Control systems, Artificial intelligence, Mechatronic integration, and Signal processing.</td>
</tr>
</tbody>
</table>