College of

Electrical Engineering and

Computer Science

Department of Electrical Engineering

Department of Computer Science and Engineering

Department of Communications, Navigation and Control Engineering

Department of Optoelectronics and Materials Technology

Institute of Optoelectronic Sciences

Deportment of Electrical Engineering

By encompassing a wide range of fields, such as signal processing and communication, control theories and applications, power and electronic circuit design and implementation, solid-state electronics, electromagnetic waves, and information science and technology, the Department of Electrical Engineering and Computer Science provides modern teaching and research programs for future scientists and engineers. BS, MS, and PhD degrees in electrical engineering are offered to qualified candidates. A master graduate extension program is also available for professionals who desire to advance their careers in the field of electrical engineering.

This department has a long and proud history of excellence. Over the years, many of our graduates have excelled in a wide range of specialized fields in electrical engineering. Our alumni have achieved distinguished career goals, such as a chief technical officers, presidents, vice presidents, general managers, senior managers, and division heads of some of the most successful high-tech companies in Taiwan. These companies include Skynet Electronic Co., HTC Corporation, ICP Electronics Inc., Taiwan Semiconductor Manufacturing Company Limited (TSMC), United Microelectronics Corporation (UMC), Quanta Computer Incorporated, Microlife Corporation, WPG Holdings Ltd. (WPG), AVerMedia Technologies (AVERMEDIA), Nuvoton Technology Corp., Avitone, Supreme Electronics Co., and Chunghwa Telecom Co. Many of our alumni are also the founders of these successful corporations, including Skynet Electronic, Microlife Corporation, AVerMedia Technologies, ICP Electronics Inc., Avitone, and Supreme Electronics Co.

Deportment of Computer Science and Engineering

Since its establishment in August 1996, the Department of Computer Science and Electrical Engineering has developed a strong computer science curriculum that offers BS, MS, and PhD degrees. The faculty has expertise in a broad spectrum of computer science fields. These include theoretical computer science, algorithm design and analysis, mobile computing, IC design, database, programming language and compiler design, parallel processing and distributed systems, artificial intelligence, computer graphics, image and speech processing, pattern recognition, data compression, bioinformatics, and scientific computing.

Department of Communications, Navigation, and Control Engineering

The Department of Communications, Navigation, and Control Engineering offers bachelor and master degrees in communications, navigation, and control engineering. Excellence and innovation in teaching and research are emphasized in three specialties: advanced control, navigation electronics, and mobileradio communications and signal processing. The faculty members have made significant achievements in government-funded research projects, and have contributed to technology that has been adapted and commercialized into marketable products. The department aims to provide a solid educational background in communications, navigation, and control engineering to enable students to fulfill industrial requirements. The 4-year undergraduate program develops students into highly trained engineers who are ready to work in highly competitive high-tech industries or to pursue postgraduate studies. The MS program consists of coursework and independent research, and is successfully completed after the submission of a thesis. Graduate students are expected to possess system integration skills and R&D capabilities in their related technical areas. The main research equipment of the department are a high-precision GPS simulator, a GSM 1800 radio wave strength-measuring system, a multichannel fading simulator, a radar simulator, a twin-rotor helicopter flight control system, an intelligent guidance mobile robot, and a geographic information development system.

Department of Optoelectronics and Materials Technology

    Undergraduate Program of Optoelectronics and Materials Technology was established in 2015, with the ultimate goal to provide educations and trainings for young people so that they can become the main workforce in the future development of our country and industry. It is expected that the students graduated from this program may compete well in the future world, with basic skill and capability of research, novel creativity, and interdisciplinary thought, specialized in the fields such as optoelectronic science and technology, advanced material, and marine energy. Besides, the students should also be educated to be concerned about humanism and prepared with an international horizon.

The main technical areas to develop in Undergraduate Program of Optoelectronics and Materials Technology include green optoelectronic technology, nano and interface materials, and newly emerging science and technology in optoelectronic advanced material. The strategies we take to develop this program are given as follows:

1. Forming faculty groups to conduct interdisciplinary research and offer courses in new subjects, responding the rapid development and change in science and technology.

2. Enhance the recognition of global crisis, training the students to enable them to face the future challenges.

3. Integrate research resources to plan experimental courses, which merge subjects of various different fields.

4. Students are required to take special topics of research, which may be continued later on, as a part of the research in their master program (in case they join the MS program).

5. Provide a course of oral and writing presentation, in English, on science and technology, as part of background needed for student's future research.

6. Apply the newly-developed teaching tools, including both hardware and software to improve the student’s learning.

The design and plan of courses in Undergraduate Program of Optoelectronics and Materials Technology is to educate and train the students so that they may have an interdisciplinary background, with good capabilities in both theory and practice. The capabilities which students are expected to have include: 1. Capability of making use of the knowledge of optoelectronic and material science and technology:

1–1 Applying the skill and background learned in courses to design and carry out experiments.

1–2 Operation of instruments and analysis and testing of materials.

1-3 Performing the analysis and explanation of experimental results and data.

1-4 Exploring, analyzing, and resolving problems.

2. Capability of division of labor, coordination, effective communication, and teamwork.

3. Capability of being in touch with current events, understanding the impact of material science and technology on the environment, community and globe, realizing the professional accountability, and social responsibility.

4. Capability of continued learning, acquiring new knowledge, catching up the international development tendency, and facing the challenge at anytime.

Strategies of teaching in Undergraduate Program of Optoelectronics and Materials Technology:

1. Promoting student’s learning efficiency via various approaches, making them become high quality workforce in the optoelectronic and material science and technology.

2. Core courses will include all fundamental knowledge with aids of practical training.

3. All courses are taught in Research-oriented fashion, promoting student's competitiveness and ability of responding to adapt the industrial developments.

4. Construct a high-quality teaching environment (updating teaching system and equipment at the right moment)

5. Build e-education system and make use of E-GO system (including class-map, Moodle, asynchronous distance education platform, Podcast learning system, informal curriculum management platform)

6. Carry out cooperation among different departments and institutes, supporting courses each other.

7. Invite alumni back to campus to share experience in career in industry.

The purpose of the courses of Undergraduate Program of Optoelectronics and Materials Technology is to educate and train the young people so that they will not only be talented in the fields of optoelectronic and material science and technology but also have an interdisciplinary Scope, being able to face future global economic challenge.

Institute of Optoelectronic Sciences

Optoelectronics is a crossbreed of electrical engineering and modern optical science/engineering. The multidisciplinary nature of this field requires a thorough understanding of microelectronics, semiconductor lasers, and modern optics. Because of the extensive applications of optoelectronics in modern technologies, demand for workers skilled in optoelectronics/photonicsis increasing. The Institute of Optoelectronic Sciences was founded in 1997 to address this need, advance innovative research, and provide higher-education degrees in optoelectronic science and technology. Currently, the focus of the program is on the research and development of nano-photonic devices and detection technologies. In addition, the institute has a close inter-departmental collaboration with the Department of Electrical Engineering, the Institute of Materials Engineering, the Department of Computer Science, and other departments that specialize in oceanographic Science.

圖片說明:

A prototype Underwater Acoustic Communication System

Video surveillance system

Simulated net cages equipped with auto-sensor system

Evaporation chamber

Electronic Navigational Chart Database of Taiwan Waters

Twin-robot indoor patrol

Confocal Raman microscope

Sputter

Photoluminescence spectroscopy
Dry glove box

Liquid crystal and laser optics experimental system

Atomic Force Microscope