College of Engineering Sciences

Contact Information

Phone: +82-61-659-7205~7208, 6622
Fax: +82-61-659-7209
E-mail: richwj@jnu.ac.kr
URL: http://engc.jnu.ac.kr

- School of Electrical and Computer Engineering
  - Major in Electrical and Semiconductor Engineering
  - Major in Computer Engineering
- Department of Electronic Communication Engineering
- Department of Mechanical Design Engineering
- Department of Mechanical System Engineering
- Department of Mechatronics Engineering
- Department of Refrigeration and Air Conditioning Engineering
- Department of Marine and Civil Engineering
- Department of Environmental System Engineering
- Department of Integrative Biotechnology
- Department of Chemical and Biomolecular Engineering
- Department of Architecture
- Department of Biomedical Engneering
- School of Healthcare and Biomedical Engineering
- Department of Petrochemical Materials Engineering
- Department of Industrial Technology Convergence Engineering
- Affiliated Research Centers
  - Ocean Civil Engineering Research Center
  - Refrigerating Techniques Research Center
  - Chemical and Safety Engineering Research Center
  - Environmental Research Center
  - Innovation cener of education-Engineering

Electrical and Computer Engineering

Contact Information
Phone: +82-61-659-7310, 7250
Fax: +82-61-659-7319, 7259
E-mail: sng_j@jnu.ac.kr
URL: http://eec.jnu.ac.kr

What is Electrical and Computer Engineering?

In the school of Electrical Computer Engineering, advanced engineers are cultivated to develop and apply appropriate technologies. Every major in the school focuses on high-level technology, and there are interesting fields such as new generation mobile communications, computer communications, optical communication, servomechanism and electronic measurement, power electronics, semiconductor, power system, digital and computer circuit layout, computer graphics, design and application of embedded systems, artificial intelligence, computer program development, ubiquitous systems, and web application developing fields. To fulfill student expectations, there are several education programs, such as special education programs.

School of Electrical and Computer Engineering

In this school, education is supported by offering numerous scholarships and overseas training opportunities, as well as employment guidance and field experience.

Students are able to participate in many programs. In their first year of study, students are provided with a wide range of courses from basic to high technology education, and in their second year of study will decide a specific major (such as Computers and Electrical and Semiconductor Engineering). Students must study major theories, hardware and their experiments. These studies focus on both theory and practice, and students can apply skills acquired from these studies to future fields.

Professors

Major in Electrical and Semiconductor Engineering

- Nam-Sup Choi, Ph.D.
  [Professor, Power Electronics, nschoi@jnu.ac.kr]
- Buhm Lee, Ph.D.
  [Professor, Power Systems, buhmlee@jnu.ac.kr]
- Yang-Hee Joung, Ph.D.
  [Professor, Semiconductor Materials and Processes, jyanghee@jnu.ac.kr]
- Young-Chul Bae, Ph.D.
  [Professor, Chaos, Artificial Intelligence, Cyberphysical System (CPS), Instrumentation and Automation, ycbae@jnu.ac.kr]
- Kyoung-Min Kim, Ph.D.
  [Professor, Image/signaling and computer vision, system automation, kkm@jnu.ac.kr]
- Seong-Jun Kang, Ph.D.
  [Professor, Functional Materials and Devices, VLSI Process, ferroksj@jnu.ac.kr]

Major in Computer Engineering

- Kang-Chul Kim, Ph.D.
  [Professor, VLSI Design and Embedded Systems, kkc@jnu.ac.kr]
- Chang-Gyoon Lim, Ph.D.
  [Professor, Artificial Intelligence, cglim@jnu.ac.kr]
- Gwang-Jun Kim, Ph.D.
  [Associate Professor, Computer Communication, kgj@jnu.ac.kr]
- Tai-Hoon Kim, Ph.D.
  [Professor, Cyber Security, taihoonn@jnu.ac.kr]

■ Degree Requirements

Students are required to earn 140 credits, with 27 credits from electives (15 credits from cultural studies courses) and 82 credits from department courses (32 credits from core courses).

■ What Do You Study?

Major in Electrical and Semiconductor Engineering

▮ Core Courses

Living English 1
Mathematics 1
Mathematics 2
General Physics 1
Electrical Engineering Basic Lab
Electromagnetics 1
Electromagnetics 2
Circuit Theory 1
Circuit Theory 2
Solid State Electronic Device Engineering 1
Robot Engineering
Automatic Control 1
Electric Machinery 1
Power Engineering 1
Electronic Circuit 1

▮ Electives

Introduction to Electrical and Semiconductor Engineering
Engineering Mathematics
Digital Circuit Design 1
Digital Circuit Design 2
Semiconductor Engineering
Applied Computer
Programming Language
Advanced Engineering Mathematics
Digital Circuit Lab
Introduction Capstone Design
Solid State Electronic Device Engineering 2
Artificial Intelligence
Automatic Control 2
Electric Machinery 2
Electric Energy Conversion Engineering
Power Engineering 2
Electronic Circuit 2
Microelectronics Design and Lab
Field Practice (Electrical and Semiconductor)
Field Practice 1 (Electrical and Semiconductor)
Field Practice 2 (Electrical and Semiconductor)
Field Practice 3 (Electrical and Semiconductor)
VLSI Process 1
VLSI Process 2
Signals and System Engineering
Applied Power Electronics
Experience Intern
Experience Intern 1
Experience Intern 2
Electrical Machinery and Lab
Power Systems
Electronic Display Engineering

Control system Design
Digital Signal Processing
Microprocessor and Lab
Electrical Engineering Materials
Physical Electronics
Instrumentand Lab
Soft computing
Creative Engineering Design 1 (Capstone Design)
Creative Engineering Design 2 (Capstone Design)

Major in Computer Engineering

▮ Core Courses

Living English 1
Mathematics 1
Introduction of Artificial Intelligence
Database Management
Introduction to Embedded Hardware
Design of Computer Architecture & Practice1
Network and Socket Programming Actual Training
Software Engineering
Embedded Programming
Computer Graphics
Design of Microprocessor Applications & Practice
Data and Computer Communication
Digital Circuits Design & Practice
Python Programming
Big Data Analysis and Lab
Algorithms
Operating System
Design of Computer Architecture & Practice 2
Field Practice1
Machine Learning
Image Processing
Operating System Design and Practice
Embedded System
Capstone Design 1
Field Practice
Application of Machine Learning
Multimedia System
Mobile Programming application
Parallel Computer Architecture and Programming and Practice
Capstone Design 2
Introduction to R data analysis

▮ Electives

C language Programming and Practice
Game Programming & Practice 1
Introduction to Data Science and Lab
Data Structures & Practice
Discrete Mathematics
Computer Network
Computer programming I
Game Programming & Practice 2
Engineering Mathematics

■ Careers

Graduates tend to advance to positions in domestic and foreign graduate schools, educational organizations (middle schools), government and public offices, broadcasting fields, communication enterprises, computer network industries, information investment organizations, semiconductor companies, electronic companies, semiconductor device research organizations, Bio-metric System companies, CCTV companies, security maintenance companies, Korean Electric Power, Korean Water Resources, nuclear power generation fields, game planning fields, game graphic design fields, game programming production fields, character design fields, advertisement design fields, game graphic fields, web design fields, H/W fields, venture foundation, and other related fields.

Electronic Communication Engineering

Contact Information
Phone: +82-61-659-7230
E-mail: llubin@jnu.ac.kr
URL: https://ece.jnu.ac.kr

What is Electronic Communication Engineering?

Electronics and communications engineering is a broad field of engineering that includes electrical and electronics, hardware and software, covering a wide range of topics ranging from basic studies to applications.

There are artificial intelligence (AI), wireless communication (5G, 6G), Internet of Things (IoT), big data, embedded systems, microwave and antenna engineering, integrated circuit design, voice recognition and signal processing, and automatic control. This is the ICT technology that is the basis of the Fourth Industrial Revolution.

There is a need for a large number of talent to lead the 6th generation mobile communication technology worldwide.

Department of Electronic Communication Engineering at CNU

Chonnam National University's Department of Electronics and Telecommunications Engineering was established in 1971 and operates bachelor's, master's, and doctoral programs.

This place offers a pleasant educational environment and various experimental practices, and a wide range of major education allows you to obtain certificates in adjacent fields and employ various related jobs. Student education is provided with the following educational goals.

1. Cultivate engineers with creativity to research and develop a wide range of advanced applications
2. Computer simulation training fosters various circuit interpretation and design skills
3. Training professional engineers who will play a pivotal role in the globalization and information age
4. Training excellent engineers with creativity to lead the era of the 4th Industrial Revolution

Professors

- Ki-Ryang Cho, Ph.D.
  [Professor, Optimization, krcho@jnu.ac.kr]
- Seung-Yeop Rhee, Ph.D.
  [Professor, Microwave Engineering, ysrsy@jnu.ac.kr]
- Dae-Ik Kim, Ph.D.
  [Professor, Integrated Circuit Design, daeik@jnu.ac.kr]
- Han-Seung Jang, Ph.D.
  [Associate Professor, IoT & Machine-to-Machine Communications, Smart Grid, hsjang@jnu.ac.kr]

■ Degree Requirements

Students are required to earn at least 140 credit (99 from Department courses and 41 from electives), which normally takes four years of full-time study, and pass foreign language qualifying exams or a dissertation.

■ What Do You Study?

▮ Core Courses

Basic English
English for Global Communication 1
Electro-Magnetics
Optimization Programming
Communication Theory
Digital System Design
Communication Circuit Design & Experiments 1

▮ Electives

Electronic Communication Introduction
Software Programming Basics & Practice
Engineering Mathematics
Basic Circuit Experiment
Linear Algebra
Circuit Theory
Basic Microprocessor
Digital Engineering
Big Data Processing
Numerical Analysis and Laboratory
Applied Engineering Mathematics
Radio Engineering
Artificial Intelligence and Machine Learning
Electromagnetic Field
Electronic Circuit Experiments 1
Computer Communications
Internet of Things and Autonomous Driving
Signal Processing
Electronic Circuit Experiments 2
Creative Engineering Design(Capstone Design)
Microwave Engineering
Smart Factory
Antenna Engineering
Acoustic Engineering
Complete Design for Creative Engineering (Capstone design)
Sensor Engineering
RF Circuit Design

■ Careers

Graduates tend to advance to positions in domestic and foreign graduate schools, government and public offices, broadcasting fields, communication enterprises, computer network industries, information investment organizations, semiconductor companies, electronic companies, semiconductor device research organizations, Korean Electric Power, Korean Water Resources, nuclear power generation fields, and other related fields.

Department of Mechanical Design Engineering

Contact Information
Tel: +82-61-659-7280
E-mail: dbstjd0504@jnu.ac.kr
URL: http://mechauto.jnu.ac.kr/

■ Department of Mechanical Design Engineering at Chonnam National University

This department focuses on fostering creative and specialized mechanical design engineers necessary for the overall industry (machinery, automobile, aerospace, construction, chemistry, refrigeration, etc.) through various theoretical education, experiments, and practice.

To this end, mathematics and computer learning are emphasized as basic subjects, and material mechanics, fluid mechanics, thermodynamics, and dynamics, which are basic subjects of mechanical design engineering, are learned. It learns various application subjects such as sensor and measurement engineering, mechanical design, fluid machinery, heat transfer, thermal fluid flow, automatic control, vibration, robotics, renewable energy, etc.

It also focuses on developing simulation and mechanical design skills using computers by expanding the use of comprehensive design and analysis software (CAD/CAE programs).

■ Professors

- Sang-Kyoo Park, Ph.D.
  [Professor, Fluid Engineering and Turbulence, psk@jnu.ac.kr]
- Young-Wann Kim, Ph.D.
  [Professor, Mechanical Design and Mechanics of Composite Materials, wannkim@jnu.ac.kr]
- Ki-Seong Kim, Ph.D.
  [Professor, Heat and ParticleImaging Velocimeter, sngkim@jnu.ac.kr]
- Seung-Uk Ko, Ph.D.
  [Professor, Dynamics Control and Biomedical, kos2@jnu.ac.kr]
- Sang-Hun Kim, Ph.D.
  [Assistant Professor, Applied solid dynamics, shkim83@jnu.ac.kr]

■ Degree Requirements

Students are required to earn 140 credits, normally over a period of 4 years. Students on average earn 18 credits per semester.

■ What Do You Study?

▮ Core Courses

Statics
Thermodynamics 1
Fluid Mechanics 1

Mechanics of Materials 1
Dynamics
Mechanical Design
Automatic Control
Energy Conversion Engineering
Fluid Machinery
Captone Design 1

▮ Electives

Engineering Mathematics
Introduction to Electrical Engineering
Materials in Mechanical Engineering
Mechanical Element Drawing
Thermodynamics 2
Fluid Mechanics 2
Mechanics of Materials 2
Sensor and Experiment Engineering
Heat Transfer
Artificial Intelligence
Field Training1
Mechanical Vibration
Robot Engineering
Design Optimization
Field Practice 2
Comprehensive design using CAD
Internal Combustion Engine
Mechatronics & Practice
Hydraulic Engineering
Computational Mechanical Design
Field Practice
Field Practice 3
Renewable Energy
Fluid thermodynamics and Practice
Captone Design 2
Field Practice

■ Careers

Graduates are able to pursue careers in engineering, electronics, automobile, and construction firms. They may also enroll in graduate programs in the field of mechanical design engineering.

Graduates may be qualified to work as heavy industry employees, technical public officials, and government officers.

Department of Mechanical System Engineering

Contact Information
Tel: +82-61-659-7220
Fax: +82-61-659-7229
E-mail: dj3220@jnu.ac.kr
URL: https://mechse.jnu.ac.kr

What is Mechanical System Engineering?

The Department of Mechanical Systems Engineering is a place to learn the "mechanical engineering" required by machinery, metals, shipbuilding and plants to suit the characteristics of the national industrial complex in Gwangyang Bay. Based on mechanical engineering, education is provided faithful to basic mechanical engineering studies such as the relationship between motion and force, energy conversion, and material flow control, and current adaptive mechanical engineering studies necessary for design processing. Through this, it operates curricula and comparative courses aimed at fostering talents who can play a pivotal role in mechanical engineering at industrial sites and research institutes and creatively solve problems in future high-tech industries.

The curriculum is designed to combine theoretical and practical skills through basic mechanics, computer-aided design (CAD), laboratory / laboratory and capstone design, field practice, and mechanical engineering projects. In addition, various comparative courses are conducted to nurture engineers who have a sense of professional ethics, cooperative ability, and sound personality as members of the industrial society.

Professors

- Kyung-Jo Park, Ph.D.
  [Professor, Dynamics and Vibration, kjpark40@jnu.ac.kr]
- Chung-Youb Kim, Ph.D.
  [Professor, Solid Mechanics, kimcy@jnu.ac.kr]
- Hei-Cheon Yang, Ph.D.
  [Professor, Thermal and Fluid Engineering, hcyang@jnu.ac.kr]
- Hoon Kim, Ph.D.
  [Professor, Mechanics Control and Measurements, khoon97@jnu.ac.kr]
- Bong-Ho Moon, Ph.D.
  [Professor, Tribology, mbh@jnu.ac.kr]

Degree Requirements

Students are required to earn 140 credits, normally over a period of 4 years. Students on average earn 18 credits per semester.

What Do You Study?

Core Courses

English for Global Communication 1
Mathematics 1
General Physics 1
General Physics 2
Statics mechanics
Thermodynamics 1
Fluid Mechanics 1
Mechanics of Materials 1
Mechanical Element Drawing
Dynamics
Introduction to Electrical and Electronic Engineering
Machine Tools Act 1
Automatic control
Design Of Machine Elements 1

Electives

Kinematics of Mechanisms
Mechanical Design and Drawing
Material Mechanics 2
Hydrodynamics 2
Thermodynamics 2
Programming and Practice
Measurement engineering
Heat and substance transfer and practice
Rigid Dynamics and Practice
Capstone Design Lab1
Welding engineering and practice
Machine Tools Act 2
Field training 1
Non-destructive inspection engineering
Mechanical materials
Next Generation Transport System
Sensors and the Internet of Things
CAD 3D
Vibration engineering
Field training 2
Capstone Design Lab2
precision processing
Vehicle dynamics
Energy air conditioning system
Field training 3
Capstone Design Lab3
Mechatronics System
Mechanical design and practice
Safety engineering
Structural analysis
Noise engineering
Field training 4
Capstone Design Lab4
Mechanical System Design Lab
Energy conversion system

Careers

Graduates are able to pursue careers in engineering, electronics, automobile, and construction firms. They may also enroll in graduate programs in the field of mechanical systems engineering.

Graduates may be qualified to work as heavy industry employees, technical public officials, and government officers.

Department of Mechatronics Engineering

Contact Information
Tel: +82-61-659-7710, 7380
E-mail: rhwl58@jnu.ac.kr
URL: https://mechatronics.jnu.ac.kr

What is Mechatronics Engineering?

The Department of Mechatronics Engineering learns mechanical engineering and electronic engineering technology, a compound word of machine mechanics and electronics, and develops or operates automated systems by fusion of engineering knowledge such as machinery, electronics, ICT, computers, control engineering, intelligent robots, and smart plants. As a department with an educational goal of nurturing experts in.

That is, micro-system design and control technology, micro-mechatronics, which is a microsystem field of micro sensors and actuators, biomechatronics, a convergence field of robotics and neuroscience, including biology, mechanical engineering, and electronic engineering, detects the surrounding environment and detects the external environment. It trains intelligent robots that interact with and perform tasks by changing their behavior accordingly.

In addition, according to the Yeosu National Industrial Complex, basic knowledge related to smart plants made by the convergence of information and communication technology (ICT) is educated, and the goal is to nurture and produce competent manpower leading the cutting-edge field in the era of the 4th industrial revolution.

Professors

- Kang Chung, Ph.D.
  [Professor, Noise and Vibration Engineering, Numerical Analysis and Structural Vibration, ckang@jnu.ac.kr]
- Yang-kyu Park, Ph.D.
  [Associate Professor, Micro actuator & sensor, yangkyu.park@jnu.ac.kr]

Degree Requirements

Students are required to earn 140 credits, normally over a period of 4 years. Students on average earn 18 credits per semester.

What Do You Study?

Introduction to Static Dynamics

Introduction to Dynamics

Introduction to Mechatronics
Visual Programming
Applied Engineering Mathematics
Mechanics of Materials
Electrical equipment
Introduction to Electrical and Electronic Engineering
Instrumentation Sensor Engineering
Manufacturing Processes
Mechanical metal materials
Microprocessor
Introduction to Semiconductor Engineering
Electronic circuit and practice
Machine Element of Design
Mechanical System Design Lab1
Biomechatronic introduction
Biomechanics
Numerical Analysis
Artificial intelligence
Robot control ai
Kinematics of Mechanisms
Electromechanical Engineering Experiment
Mechanical System Design Lab2
Digital Circuit Engineering
Robotics
Machine learning
Actuator Engineering
Field Training1
Mechanical system
Mechanical Capstone Design 1
Micro Electromechanical System
Embedded System Design
Autonomous driving system
Vibration Engineering
Field Training2
Mechanical Capstone Design 2
Bio-robotics
Production System Design
Intelligent Robot Experiment
Computer vision
CAD and Practice

Careers

Graduates are able to pursue careers in engineering, electronics, automobile, and construction firms. They may also enroll in graduate programs in the field of mechanical engineering.

Graduates may be qualified to work as heavy industry employees, technical public officials, and government officers.

Department of Refrigeration and Air-Conditioning Engineering

Contact Information
Tel: +82-61-659-7270
Fax: +82-61-659-7279
E-mail: refaircon@jnu.ac.kr
URL: http://refri06.jnu.ac.kr

What is Refrigeration and Air Conditioning Engineering?

The Department of Refrigeration Engineering was established in 1988, and was then reorganized as the Department of Refrigeration and Air Conditioning in 2007. Refrigeration and Air Conditioning Engineering studies have become essential to achieving energy efficiency and product optimization. The range of applications includes computer and electronic cooling systems, medical processes and equipment, semiconductor and microprocessor fabrication, and power and energy industries.

Refrigeration engineering plays an important role in manufacturing and production processes, including food preservation technologies (processing, freezing, storage and transportation), to provide sufficient quantities to feed the growing population. Air Conditioning Engineering has been applied to provide and maintain controlled environments in buildings such as offices, houses, and factories (Korea leads the world in small air conditioner exports), as well as other large structures, such as tunnels. In the aviation fields, its application includes human-occupied spaces, aircraft equipment operation, satellites, and space stations. It is also present in manufacturing and fabrication technologies and within pharmaceutical processes to provide controlled atmosphere conditions. The Refrigeration and Air Conditioning industries are developing technical know-how to support the increasing rate of growth in Korea.

The Department of Refrigeration and Air Conditioning Engineering perseveres in its efforts to improve its curriculum and educational environment which international students are also able to study. The Department offers a variety of scholarships to international and domestic students.

School of Department of Refrigeration and Air Conditioning at Chonnam National University

The educational goal of the Department of Refrigeration and Air Conditioning Engineering is to cultivate talented thinkers who develop ideas in these fields of engineering. The faculty members teach and train international and domestic students in the design of refrigeration and air conditioning systems, the design of refrigeration plants including chemical processes and food storages, design of energy-saving machines and mechanical systems including heat exchangers, effective use of energy including natural and unused energy, and fundamental theoretical applications of engineering. The Department offers students the best conditions in relation to their study and discipline and life on campus.

The Department aims to cultivate engineers and researchers who are able to contribute to the national

development of science, engineering, and industry in the field of refrigeration and air conditioning and other related fields upon graduation.

■ Professors

- Min-Young Kim, Ph.D.
  [Professor, Food Refrigeration Engineering, kmy@jnu.ac.kr]
- Ki-Won Park, Ph.D.
  [Professor, Air Conditioning Engineering, pkw@jnu.ac.kr]
- Young-Woo Shin, Ph.D.
  [Professor, Mechanical Engineering, (Material Forming), shin5381@jnu.ac.kr]

■ Degree Requirements

The Department prepares students to meet the challenges of new ideas and technical developments in their professional fields. Students are required to earn 140 credits, with 66 credits from core courses and 28 credits from electives over a 4-year period.

Assessment is generally made based on results from exams, homework, and lab assignments.

■ What Do You Study?

Programming
Differential Equations
Fluid Mechanics
Thermodynamics
Electrical Engineering
Refrigeration and Cooling
Differential Mechanics
Heat Transfer
Mechanics of Materials
Physical Chemistry
Electronic Engineering
Fluid Mechanical
Food Freezing Theory
Mechanical Drawing
Air Conditioning Engineering
Machine Element Design
Sanitary Engineering
Design of Air Conditioning Equipment
District Heating and Cooling
Energy Utilizing Engineering
Design of Sanitary Equipment
Refrigeration Engineering
Food Freezing
Refrigeration and Air Conditioning
System Control
Pipe Engineering
Manufacturing Process of Machines
Design of Refrigeration Machinery and Heat Exchanger
Air Conditioning Equipment
Principle of Refrigeration and Air-Conditioning Equipment
Principle of Refrigeration and Air-Conditioning
Low Temperature Physics
Exercises of Refrigeration and Air-Conditioning
Design of Refrigeration Equipment
Cold Chain and Equipment
CAD/CAM
Ultra Cryogenic Engineering
Design of Thermal Systems

Careers

Graduates may seek careers both in Korea and overseas, in engineering firms, construction companies, industrial refrigeration firms, marine and transportation refrigeration companies, public enterprises, automobile firms, and in the civil service.

Marine and Civil Engineering

Contact Information
Phone: +82-61-659-7240
Fax: +82-61-659-7329
E-mail: hozilla@jnu.ac.kr
URL: http://oce.jnu.ac.kr

What is Marine and Civil Engineering?

Civil engineering serves the planning, design and construction of infrastructure, including paths and roads, harbors, airports, bridges, tunnels, power plants, dams and water supply, drainage, and public transportation systems. Traditionally, civil engineering includes the following studies: structural, hydraulic and water resource engineering, geotechnics, surveying, construction materials, transportation, and construction management.

Marine and civil engineering involves the planning and preservation of oceans, the training of interdisciplinary engineers in the field of oceanography, as well as the classical fields of civil engineering. Marine and civil engineering is required in the construction of ocean support structures and IT-related functions.

Professors

- Jae-min Kim, Ph.D.
  [Professor, Structural Engineering, jm4kim@jnu.ac.kr
- Dae-hyon Kim, Ph.D.
  [Professor, Highway and Traffic Engineering, daehyon@jnu.ac.kr
- Jung-won Huh, Ph.D.
  [Professor, Structural Reliability Engineering,jwonhuh@jnu.ac.kr]
- Young-sang Kim, Ph.D.
  [Professor, Geotechnical Engineering, geoyskim@jnu.ac.kr]
- Dong-yeob Han, Ph.D.
  [Associate Professor, Geomatics Engineering, hozilla@jnu.ac.kr]
- Jong-in Lee, Ph.D.
  [Professor, Coastal and Harbor Engineering, jilee@jnu.ac.kr]
- Chang-ho Lee, Ph.D.
  [Assistant Professor, Geotechnical Engineering, changho@jnu.ac.kr]

Degree Requirements

Students are required to earn 130 credits, normally over a period of 4 years. Students on average earn 18 credits per semester.

Core Courses

Introduction to Marine Civil Engineering and Engineering Ethics
Mechanics of Materials and Lab
Surveying and Practice
Structural Mechanics and Lab
Elementary Fluid Mechanics
Soil Mechanics and Lab 1

Hydraulics and Lab 1
Creative Design in Civil Engineering 1
Design of Reinforced Concrete Structure 1
Creative Design in Civil Engineering 2
Civil Engineering Construction
Coastal Hydraulics and Lab

Electives

Engineering Mechanics
Civil Engineering Drawing
Civil Engineering Materials and Lab
Engineering Mathematics
Ocean Surveying and Field Training
Transportation Engineering
Computational Structural Engineering
Soil Mechanics and Lab 2
Design of Steel Structures
Foundation Engineering
Highway Engineering
Hydraulics and Lab 2
Design of Reinforced Concrete Structure 2
Ocean Hydraulics and Experiment
Water Supply and Sewage Engineering
Intelligent Transportation Systems
Surveying Practice
Geology Engineering
Pre-stressed Concrete Structures
Bridge Structure Design
Transportation Facilities Design
Reclamation and Dredging Engineering
Disaster Prevention Engineering
Hydrology and River Engineering
Harbor Engineering
Design Practice for Coastal Structure
Ocean Civil Engineering Construction
Water Resource Design
Rock Mechanics
Remote Surveying
Introduction to Finite Element Method
Design for Soil Structures
Design Practice for Port and Harbor Structure
Offshore Structural Engineering

Students are required to earn 130 credits, normally over a period of 4 years. Students on average earn 18 credits per semester.

What Do You Study?

Structural Engineering

Geotechnics

Transportation Engineering/Surveying

Hydraulics/Ocean Hydraulics/Harbor Engineering

Careers

Graduates currently play active roles in central and local government organizations (e.g., Ministry of Construction and Transportation, Ministry of Environment), public corporations (Korea Water Resources Corporation, Korea Land Corporation, Korea Highway Corporation), and research institutes (e.g., Korea Institute of Construction Technology). Private companies and corporations dealing with bridges, harbors, roads, and dams require the expertise of environmental engineers. Some graduates go on to graduate school to further specialize in their disciplines in the field of civil engineering.

Environmental System Engineering

__Contact Information
Phone: +82-61-659-7260
Fax: +82-61-659-7269
E-mail: tmd1029@jnu.ac.kr
URL: http://environ.jnu.ac.kr

■ Introduction of Environmental System Engineering

Environmental System Engineering provides the solution for the environmental problems such as water and air pollution, waste disposal, and public health issues. Environmental system engineers have knowledge of advanced principles of multidisciplinary engineering, biology, chemistry, and environmental science to protect wildlife and natural resources as well as human life. The important role of environmental system engineers is to support the optimal ways for obtaining safe drinking water, the treatment of wastes, air quality maintenance, water pollution control and remediation of contaminated sites by disposal of hazardous substances. In addition, environmental system engineers can inspect and evaluate industrial and municipal facilities and programs to assess their compliance with environmental regulations. Environmental system engineers can work with environmental scientists, planners, hazardous waste technicians, engineers, and other specialists to address environmental problems in industrial and academic fields.

■ Professors

- Byeong Cheon Paik, Ph.D.
  [Professor, Water and Wastewater Treatment System, bpaik@jnu.ac.kr]
- Seong Gyu Seo, Ph.D.
  [Professor, Air Pollution Control Engineering, sseo@jnu.ac.kr]
- Eun Sik Kim, Ph.D.
  [Professor, Environmental Materials and Membrane Water Treatment, eskim@jnu.ac.kr]
- Min Jin Hwang, Ph.D.
  [Associate Professor, Industrial Environmental engineering, vip7080@jnu.ac.kr]
- Seong Yun Kim, Ph.D.
  [Assistant Professor, Water Quality engineering, seongyun.kim@jnu.ac.kr]

■ Degree Requirements

Students are required to earn 130 credits, normally over a period of 4 years. Students on average earn 18 credits per semester.

■ Curriculum

▮ Mandatory Courses

Hydraulics
Air Pollution Engineering
Water and Wastewater Treatment Engineering I

Environmental Microbiology and Lab
Solid Waste Engineering II
Environmental System Engineering and Design

▮ Selective Courses

Introduction to Environmental Engineering
Unit Operation of Water and Wastewater Treatment
Environmental and Fundamental Lab I
Physical Chemistry for Environmental Engineers
Applied Mathematics for Environmental Engineers
Micrometeorology
Analytical Chemistry and Lab
Hydrology
Solid Waste Engineering I
Environmental and Fundamental Lab II
Air Pollution Management
Air Pollution Treatment and Lab
Planning and Design of Water Supply and Sewerage System
Water Quality Management and Lab
Water and Wastewater Treatment Engineering II
Instrumental Analytical Methods
Water Supply and Sewage Engineering
Water Quality Engineering Practice Ⅰ
Design of Water and Wastewater Treatment Plant and Lab
Water Treatment Engineering
Solid Waste Management and Lab
Environmental Chemistry
Air Pollution Engineering Practice I
Water Quality Engineering Practice II
Solid Waste Engineering Practice
Marine Pollution
Legislation for Environmental Protection
Air Pollution Engineering Practice II
Water Quality Engineering Practice III
Environmental Safety Engineering
Environmental Impact Assessment
Environmental Project Lab
Resources recycling

■ Future Careers

Environmental engineers find careers in many places, such as the following:

- Environmental engineers find careers in many places, such as the following:
- Engineering consulting firms that design and construct air and water pollution control systems
- Industries that need to treat their air or wastewater discharges
- Private and municipal agencies that supply drinking water
- Companies that treat and dispose of hazardous chemicals
- Companies that operate treatment facilities for municipalities or industries
- Government agencies that monitor and regulate waste discharges
- Universities that teach and conduct research on environmental control
- Private and government laboratories that develop the new generations of pollution control systems
- International agencies that transfer knowledge and technology to the developing world
- Public interest groups that advocate environmental protection

Department of Integrative Biotechnology

Contact Information
Tel: +82-61-659-7300
Fax: +82-61-659-7309
E-mail: mpo92@jnu.ac.kr
URL: http://biotech.jnu.ac.kr

What is Department of Biotechnology?

Biotechnology is a broad term that applies to all practical uses of living organisms containing plants, animals, and microorganisms, as well as biological processes created for human benefit. For example, biotechnology is used to produce some valuable foods, pharmaceuticals, tests for diseases, and waste removal. It has made rapid progress over the last quarter of the 20th century. Much of this success is due to the expectation that the development of new technologies can produce various compounds beneficial to the daily lives of human beings and preserve environmental health. It utilizes the sciences of biology, chemistry, physics, engineering, computers, and information technology to develop tools and products that hold great promise and interest.

The Department of Integrative Biotechnology combines new biotechnology and other technologies in all areas of the pharmaceutical, bio, AI (Artificial Intelligence) big data-based digital pharmaceutical industry and stem cell and biomaterials.

Department of Biotechnology

This department has a vision to be a viable target for students who wish to pursue a degree program in bio-technology, and to undertake and produce research at an international standard.

The department contributes to several undergraduate and graduate programs. The teaching activities in the department are well-supported by dedicated faculty members, responsible for a large number of courses. More specific descriptions can be found online.

Professors

- Jin-Man Kim, Ph.D.
  [Professor, Molecular Biology, jinmank@jnu.ac.kr]
- Seung-Hwan Yang, Ph D.
  [Associate Professor, cell technology, ymichigan@chonnam.ac.kr]
- Byoung-San Moon Ph D.
  [Associate Professor, Stem cell engineering, bsmoon@jnu.ac.kr]

Degree Requirements

Students are required to earn 130 credits, and pass qualifying exams or a dissertation.

■ What Do You Study?

▮ Core Courses

Writing
Global English

▮ Biotechnology Major Courses

Microbiology 1
Genetics
Biochemistry 1
Bioindustry 1
Molecular Biology 1

▮ Electives

Bioindustry 2
Food Biotechnology Lab.
Study for Functional capacity of useful materials
Study of Antioxidants
Industrial Microbiology & Lab.
Food Biotechnology 1
Medical Resources
Cell Culture Engineering and Lab
Microbial engineering Lab.
Selected Topics in Biotechnology
Life Pharmaceutics
Biotechnology Information and Patent
Microbial Engineering 2
Microbiology 2
Microbiology Lab
Molecular biology and biotechnology
Stem Cell Engineering
Cell Biology
Molecular Biology 2
Enzymology
Cancer Biology
Neurobiology
Bioenergy Technology
Biochemistry 2
Organic Chemistry 1
Organic Chemistry 2
Fermentation Technology
Genetic Engineering
Microbial Engineering 1
Cell Signaling

■ Careers

Graduates may pursue careers in public or private research institutes, biotech companies, graduate or medical schools, and chemical plants.

Department of Chemical and Biomolecular Engineering

Contact Information
Tel: +82-61-659-7290
Fax: +82-61-659-7299
E-mail: jhb7025@jnu.ac.kr
URL: http://chemeng.jnu.ac.kr

What is Chemical and Biomolecular Engineering?

The Chemical and Biomolecular Engineering involves the study and research for the development, design, operation and management of chemical, physical, and bio-processes to provide necessary materials, which are required in cultural living of humans from natural and bio-resources. The integration of chemical and biomolecular engineering fields is a new research field reflecting the trend of fusion technologies in the advanced 21st century. Conventional chemical and biomolecular engineering deal with crude oil processing, fabrication of plastic and synthetic fibers, synthetic rubber, the separation of gases from air, environmental problems, fertilizers and foods, isolation of isotopes and development of medicines and antibiotics; these studies provide us a wealthier and more comfortable life. The chemical and biomolecular engineering takes a major role in leading the future development through nanotechnology, biotechnology, information technology, energy/environmental technology, as well as the fusion of all these technologies. The study will open the way to substantiate the future technologies in our actual human beings.

Department of Chemical and Biomolecular Engineering

The Department of Chemical and Engineering has the educational aim to provide knowledge about the manufacturing processes of bio-chemical products and operations for the conversion of raw materials into final products, as well as to cultivate creativity and a challenging spirit toward new things. To reach this goal, the department presents a curriculum that centers on teaching the basics in chemistry, physics, and biochemistry, which form the basis of natural science and on helping students to experiment and practice. The spectrum of research and educational opportunities in our department also includes biomolecular engineering, biochemical engineering, environmental engineering, chemical reaction engineering, particle technology, electrochemical engineering, semiconductor processing, and polymer and material engineering. The department has produced engineers who have greatly contributed to the nation's industrial development as sophisticated experts in inorganic and organic industrial fields including petrochemicals, fertilizers, acid-alkali, rubber, synthetic fibers, biosensors, fine chemicals, ceramics and fine polymers.

Professors

- Youn-Sop Kim, Ph.D.
  [Professor, Polymer Chemistry, yskim1@jnu.ac.kr]
- Ho-Joon Seo, Ph.D.

[Professor, Catalytic Reaction Engineering, hjseo@jnu.ac.kr]
- Hun-Soo Byun, Ph.D.
[Professor, Thermodynamics and Separation Processes, hsbyun@jnu.ac.kr]
- Soon-Do Yoon, Ph.D.
[Professor, Process and Control of Chemical Engineering Materials, yunsd03@jnu.ac.kr]
- Heon-Ho Jeong, Ph.D.
[Associate Professor, Bio-application Engineering, jeonghh29@jnu.ac.kr]

■ Degree Requirements

Students are required to earn 140 credits, and pass qualifying exams or a dissertation

■ What Do You Study?

▮ Core Courses

Physical Chemistry 1
Chemical Process Calculation 1
Chemical Engineering Thermodynamics 1
Chemical Engineering Lab 1
Chemical Engineering Lab 2
Chemical Engineering Lab 3
An Introduction to Industrial Chemistry

▮ Electives

Polymer Chemistry
Polymer Materials
Chemical Engineering Fluid Mechanics
Chemical Process Calculation 2
Engineering Mathematics 1
Engineering Mathematics 2
Inorganic Chemistry
Physical Chemistry 2
Organic Chemistry 1
Organic Chemistry 2
Inorganic Material Design
Chemical Reaction Engineering 1
Chemical Reaction Engineering 2
Chemical Engineering Thermodynamics 2
Chemical Plant Design
Chemical Engineering Unit Operation 1
Chemical Engineering Unit Operation 2
Petro Chemical Engineering
Computer Calculation in Chemical Engineering
Chemical Safety Engineering
Transport Phenomenon
Biopolymer
Properties of Polymer
Energetics Seminar
Basic Design of Chemical Engineering
Recent fusion technology and understanding
Chemical Plant Design
Process Dynamics and Control
Process Systems Analysis and Control
Computer Program and Practice of Chemical Engineering
Environmental Chemical Engineering(Project Lab1)
Analytical Chemistry 1
Bioprocess engineering
Biological Chemistry
Bioprocess Engineering
Organic Synthesis Engineering(Capstone Design)
ProjectLab2

■ Careers

Graduates may pursue careers in public or private research institutes, biotech companies, graduate or medical schools, and chemical plants.

Department of Architecture

__Contact Information
Tel: +82-61-659-7330
Fax: +82-61-659-7339
E-mail: msg3457@jnu.ac.kr
URL: http://adcnu.jnu.ac.kr/

What is Architecture?

The Department of Architecture aims to understand the basis of architectural development considering the background of architecture's comprehensive character, rapid innovation of technology, and recognition of various cultures and values. The department cultivates students' abilities to think critically and comprehensively. In addition, students are encouraged to understand nature, society, and technology through studies in architecture.

Dept. of Architecture at Chonnam National University

The educational goal of the Department of Architectural Design is to "cultivate creative architects who contribute to the sustainability of society" in connection with the educational goals of Chonnam National University.

In other words, the goal is to cultivate architects with integrated problem-solving skills that combine convergent thinking and creativity based on architectural expertise by training architects with practical skills and expertise as well as experts who will contribute to the sustainability of local communities such as culture and nature.

Students in the Department of Architectural Design will become experts in the design and construction of buildings and will have strategic thinking in dealing with the problems of the construction environment. Furthermore, you will learn the leadership you can show in your society.

In order to achieve the basic educational goal of fostering architects who contribute to the sustainability of society by combining practical skills and cultural knowledge with convergent thinking and creative skills based on architectural expertise, the department intends to produce as follows.

- Architect who practices roles and responsibilities in a sustainable society - Public Good Keeper
- Architect with Analytical Thinking and Creative Problem Solving – Analytical Designer
- Architect to understand and value local culture, resources and environment – Culture Coordinator

Professors

- Hyun-tae Kim, Ph.D.
  [Professor, Architectural Planning and Design, htkim@jnu.ac.kr]
- Joo-seong Jeong, Ph.D.
  [Professor, Architectural Planning and Design, jsjeong@jnu.ac.kr]
- Kum-ho Chung, Ph.D.
  [Professor, Architectural Planning and Design, kumho@jnu.ac.kr]
- Jun Taek Kim, Ph.D.

[Professor, Architectural Design and urban Design, juntaek.kim@jnu..ac.kr]

- seungwan LIM
  [Professor, High Performance Design Lab, swl.gonsw@jnu..ac.kr]
- Jaehoon BAE
  [Professor, Steel Structures, Seismic design, skycity-bjh@jnu..ac.kr]
- sunhyung KIM
  [Professor, Architectural Planning, sunhyung.kim@chonnam.ac.kr]

■ Degree Requirements

Students are required to earn 160 credits, normally over a period of 5 years. Students on average earn 18 credits per semester.

■ What Do You Study?

Introduction to Architecture
Architectural Design 1
Architecture Expression
Career Plan and Self Understanding
Architectural Design 2
Introduction to Building Structure
Digital Design 1
Architectural Design 3
Environmental Technology
Digital Design 2
History of Western Architecture
Structural Analysis
Architectural Design 4
Theory of behavior in architecture & Barrierfree Space
History of Korean Architecture
Architecture & Society
Architectural Design 5
Architectural Equipment
English for Architectural Practical
Building Materials
Architectural Design 6
History of Modern Architecture
Site Planning
Digital Design analysis
Architecture and Urbanism
Architectural Structure System
Building Code & Regulation
Architectural Design 7
Architectural Design 8
MethodologyArchitecturalDesign
Construction Technology
Architectural & Design Practice
sustainable Urban Design
Theory of Contemporary Architecture
Architectural Design 9
Ecological Friendly Buliding System
Architectural Business Planning & management
Architectural Design 10
Urban Planning practice
History of Oriental Architecture

■ Careers

Students may receive scholarships and funding to pursue educational opportunities overseas. Upon graduation, they may pursue careers in the architecture design sector, architecture construction sector, architecture structure sector, and architecture safety diagnosis office, in public and private institutes, and with public companies such as the Korea National Housing Corporation and Ministry of Construction and Transportation.

Department of Biomedical Engineering

Contact Information
Tel: +82-61-659-7360
Fax: +82-61-659-7369
E-mail: hyuny@jnu.ac.kr
URL: http://bme.jnu.ac.kr

What is Biomedical Engineering?

Biomedical engineering (BME) is the application of engineering principles and design concepts to medicine and biology for healthcare purposes. BME is advancing rapidly and producing important innovations that improve the quality of human life. The aim of BME is to create new technologies which can improve the work done in such areas as disease diagnosis, patient monitoring, medical treatment, and lifestyle improvement after illness or injury.

Department of Biomedical Engineering at Chonnam National University

The Department of BME at Chonnam National University was established in 2012 as a next-generation growth engine. The BME undergraduate degree program emphasizes engineering design in preparation for employment in biomedical industries and for graduate study.

This department is integrated science including medicine, electronic engineering, computer engineering, mechanical engineering, and a wide range of basic and applied biology knowledge. The courses and academic programs of BME are linked to the biomedical industry that requires substantial overall knowledge and skills.

Professors

- Chang-Moon Lee
  [Professor, Molecular Imaging and Therapy, Nanomedicine, Biomaterials, Drug Delivery System, cmlee@jnu.ac.kr]
- Jihoon Kang
  [Associate Professor, Medical Imaging System, jihoon.kang@jnu.ac.kr]
- Dowon Kim
  [Associate Professor, Neuroengineering, Biomedical Signal Processing, dowon.kim@jnu.ac.kr]
- KangJu Lee
  [Assistant Professor, Bio/micro medical devices, Micro/nano fabrication, Functional biomaterials, Regeneration applications, knjulee@jnu.ac.kr]
- Young-Jin Jung
  [Associate Professor, Biomedical signal and Image processing, Intelligent rehabilitation engineering, Brain engineering, yj@jnu.ac.kr]
- Bo Kyeong Yoon
  [Assistant Professor, Biosensor, Nanobiotechnology, Antibacterial agent, Antiviral agent, bkyoon@jnu.ac.kr]

■ Degree Requirements

The undergraduate programs are designed to help students develop both the understanding and capability needed to meet the challenges of a modern technological society. Students are required to earn at least 140 credit hours (109 from Department courses and 31 from electives), which normally takes four years of full-time study. Students are also able to earn double majors or minors as a means of broadening the scope of their studies.

■ What Do You Study?

Human Anatomy
Human Physiology
Body structure and Function
Medical Terminology
Digital Fundamentals
Circuit Theory & Practices
Biomaterials
Signals and Systems
Introduction to Biomedical Engineering
Medical polymers
Biomedical Instrumentation
Biomedical Advanced Programming and Practices
Biomedical Digital System Design and Practices
Biomedical Electronic Circuits and Practices
Biomedical Signal Processing and Practices
Biomedical Image Processing and Practices
Biomedical System Design and Practices
Biomedical Programming language and Practices
LabView Programming and Practices
Matlab Programming and Practices
Adcanced VHDL Practices
Brain Engineering
Digital Signal Processing
Microprocessor and Practices
Mobile Programming and Practices
Bionanotechnology
Biosensor Engineering
Biomedical radiology
Hospital Information System
Biomechanics
Biochemistry
Cell Biology
Organic Chemistry
Medical Devices Regulation
Biomedical Equipment and System
Biomedical Optical Engineering
Understanding of Clinical Medicine
Rehabilitation Engineering
Tissue Engineering and Regenerative Medicine

■ Careers

Graduates are employed at universities, in industry, in hospitals, in research facilities of educational and medical institutions, and in agencies for medical devices.

They often serve a coordinating or interfacing function, using their background in both the engineering and biomedical fields. Graduates may also enroll in a graduate program in the field of biomedical engineering.

School of Healthcare and Biomedical Engineering

Contact Information
Tel: +82-61-659-7360, 7390
Fax: +82-61-659-7369
E-mail: hme@jnu.ac.kr
URL: http://hme.jnu.ac.kr

What is Healthcare and Biomedical Engineering

New diseases are emerging, and the current diseases are also evolving in various ways as society and environment change. Modern medical technology has made remarkable advances in our ability to diagnose and treat these diseases. In recent, a new biomedical paradigm is being born through the unprecedented convergence of information and communication technology (ICT), artificial intelligence (AI), data science biotechnology (BT), nanotechnology (NT), medicine, and pharmaceutics. Healthcare medical engineering is a study that goes beyond existing methods in the future medical industry to suggest new treatment methods for diseases, early prevention of diseases, and a new medical ecosystem that can manage individual health.

School of Healthcare and Biomedical Engineering at CNU

School of Healthcare and Medical Engineering aims to train the next-generation advanced medical glocal core experts who will lead the future medical industry. School of Healthcare and Medical Engineering includes Major of Bio-Healthcare and Digital Healthcare. Based on biotechnology and medical/pharmaceutical knowledge, in Major of Bio-Healthcare, students learn the fields of bio-analysis/diagnosis, genetic engineering, pharmaceuticals, cosmetics, etc. to care for the human body. Major Bio-Healthcare aims to nurture talents who lead future healthcare by acquiring new-concept healthcare, and customized precision medicine. Major of Digital Healthcare aims to nurture talents who can provide personalized medical services anytime, anywhere based on future technologies such as medical big data, artificial intelligence, medical IoT, and advanced medical devices.

Professors

- Chang-Moon Lee
  [Professor, Molecular Imaging and Therapy, Nanomedicine, Biomaterials, Drug Delivery System, cmlee@jnu.ac.kr]
- Jihoon Kang
  [Associate Professor, Medical Imaging System, jihoon.kang@jnu.ac.kr]
- Dowon Kim
  [Associate Professor, Neuroengineering, Biomedical Signal Processing, owon.kim@jnu.ac.kr]
- KangJu Lee
  [Assistant Professor, Bio/micro medical devices, Micro/nano fabrication, Functional biomaterials,

Regeneration applications, knjulee@jnu.ac.kr]

- Young-Jin Jung
  [Associate Professor, Biomedical signal and Image processing, Intelligent rehabilitation engineering, Brain engineering, yj@jnu.ac.kr]
- Bo Kyeong Yoon
  [Assistant Professor, Biosensor, Nanobiotechnology, Antibacterial agent, Antiviral agent, bkyoon@jnu.ac.kr]

■ Degree Requirements

The undergraduate programs are designed to help students develop both the understanding and capability needed to meet the challenges of a modern technological society.

Students are required to earn at least 140 credit hours (75 from Department courses and 65 from electives), which normally takes four years of full-time study.

Students are also able to earn double majors or minors as a means of broadening the scope of their studies.

■ What Do You Study?

Introduction to Healthcare Medical Engineering
Engineering Mathematics
Medical Terminology
Body structure and Function
Ethics for Healthcare & Medical Engineer
Biomedical Instrumentation
Introduction to Computer Programming
Future Healthcare Industry and Innovative Start-Up
Probability and Statistics
Circuit Theory & Practices
Quantitative Analysis
Biomaterials
Biochemistry
Cell Signaling
Genetic Engineering
Virology and Biotechnology
Bio-Optics
Cell and Animal Experiment
Organic Chemistry
Pharmaceutical Instrument analysis and practice
Healthcare Sensor Engineering
3D Bio-Printing and Biofabrication
Immunology
Bioanalytical Instruments
Radiation Measurement Theory and Practice
Medical polymers
Cosmeceuticals
Bioinformatics
Drug Delivery System
Stem Cell Engineering and Bioreactor
BioMEMS
Smart Theranostics
Pharmacological Toxicology
Understanding of Clinical Medicine
Linear Algebra
Signals and System Engineering
Biomedical Programming
Computer System Architecture
Circuit Theory with Practice
Advanced Biomedical Programming
Introduction to Data Science
Digital Signal Processing
Introduction to Opensource
Computer Networks
Microcontroller and Practices
Mobile Programming and Practices
Biomedical Signal Processing and Practice
Medical Pattern Recognition

Biomedical Mechatronics
Introduction to Artificial Intelligence
Digital Health
Medical Data Analysis
Introduction to Deep Learning
Internet of Medical Things System Design and Practice
Introduction to Neuroengineering
Biomedical Image Processing and Practices
Bigdata Engineering
Hospital and Medical Information System

■ Careers

Graduates are employed at universities, in industry, in hospitals, in research facilities of educational and medical institutions, and in agencies for medical devices.

They often serve a coordinating or interfacing function, using their background in both the engineering and biomedical fields. Graduates may also enroll in a graduate program in the field of biomedical engineering.

Department of Petrochemical Materials Engineering

Contact Information
Tel: +82-61-659-7760
E-mail: cukacuka@jnu.ac.kr
URL: https://pcme.jnu.ac.kr

What is Petrochemical Materials Engineering?

Petrochemical Materials Engineering is helping solve the world's most daunting challenges in health, energy, and the environment by improving the products that people use every day. Products made from petrochemicals－derived from crude oil and other fossil fuels such as coal and natural gas or from renewable sources such as sugar cane, corn, and other biomass－are found in products as diverse as automobiles, smartphones, computers, clothes, luggage, boats, fertilizers, pesticides, drugs, soaps, paints, flooring, and insulating materials, which are crucial in modern civilization.

Department of Petrochemical Materials Engineering at Chonnam National University

The Department of PCME at Chonnam National University was established in March 2021 by new promotion policy of the Korean Ministry of Education for cultivating the future talent by equipping them with the skills required in the upcoming society. With the advent of the 4th Industrial Revolution, the high technologies are becoming ever more sophisticated, and the society we live in now demands different set of skills compared to past generations. The PCME is building the differentiated educational environment to meet future industrial demand and to be conducive making our students competitiveness freely. The PCME comprises the following two majors to foster understanding that is necessary for the development of engineering: petrochemical convergence materials engineering and green chemical process engineering.

Professors

- Hyosung An
  [Assistant Professor, Functional polymeric and composite materials, 3D Electron tomography, hyosungan@jnu.ac.kr]
- Byun Jaewon
  [Assistant Professor, Process Systems Engineering, jaewonbyun@jnu.ac.kr]

Degree Requirements

Students are required to earn at least 130 credit (99 from Department courses and 31 from electives), which normally takes four years of full-time study, and pass qualifying exams or a dissertation.

■ What Do You Study?

Fundamentals of petrochemical materials engineering
Introduction of chemical engineering and process technology
Petrochemical Engineering Materials Design
Artificial Intelligence and Advanced Technologies
Basic Design of Chemical Engineering
Leadership Communication and Business mind
Physical Chemistry 1,2
Organic Chemistry 1,2
Engineering Mathematics 1,2
Basic Experiment Of Chemical Engneering
Calculations in Chemical Engineering
Process Control
Materials Science
Polymer Chemistry
Polymer Physics
Reaction Engineering
Process Design and Analysis
Chemical Engineering Thermodynamics
Chemical Process Thermodynamics
Field Practice for PettroChemical material Engineering1,2
Heat and Mass Transfer Phenomena
Electrochemistry Design
green Chemical Process Design
Chemical Engineering Thermodynamics
Special Topic in Renewable Energy Systems
Chemical Plant Design
Chemical Process risk assessment
Green Process Design
Catalyst Chemistry
Chemical Engineering Experiment Capstone Design Practices 1,2
Capstone Design Practices 1,2
Chemical Safety and Quality Control
Chemical Electronic Materials Design
Reaction Engineering
Petrochemical Engineering Materials Design
Petrochemical Industry

■ Careers

Graduates obtain employment in public research institutes and chemical plants (petrochemical, oil refinery, fertilizer, synthetic resin, oil and fat, food industry, inorganic chemistry, explosives, cement, glass, dye, rubber, paint, pulp and paper, metal, and smelting) in all parts of the country, including the Yeosu.

Department of Industrial Technology Convergence Engineering

Contact Information
Tel: +82-61-659-7750
Fax: +82-61-659-7759
URL: https://itce.jnu.ac.kr

What is Industrial Technology Convergence Engineering?

The Department of Industrial Technology Convergence Engineering fosters convergence-type talents with humanities imagination and scientific and engineering creativity to lead the era of the 4th industrial revolution for industrial workers who graduated from specialized high schools or late learners.

In addition, a dedicated course for post-learners (lifelong education system) is established and operated to promote regional strategic industry, future new industries, and the development of local communities. We carry out education specialization of education tailored to the industry's demand and field-oriented practical education curriculum. By operating the creative convergence job competency strengthening program of the 4th industrial revolution required by companies and society, we nurture talented people with customized professional knowledge centered on job expansion, re-employment, and second start-up.

In particular, high tech education required for industrial sites in Gwangyang Bay Area and Yeosu National Industrial Complex based on ICT and artificial intelligence is carried out. By educating various courses such as basic competency reinforcement, chemical engineering field competency reinforcement, plant field competency reinforcement, industrial automation field competency reinforcement, etc. it trains professional manpower who can lead the 4th industry and future information society.

Major Industrial Technology Convergence Engineering

- Business competency enhancement: A course to cultivate in-depth professional knowledge necessary for self-development and job competency enhancement
- Reinforcement of competence in chemical engineering: A process to understand chemical processes and acquire specialized knowledge applicable to practice
- Reinforcement of plant field competency: A course to nurture practical skills for measurement and control to achieve high efficiency in plant work
- Reinforcement of industrial automation competency: Artificial intelligence and IoT-based industrial automation technology learning and advancement course

Degree Requirements

Students are required to earn 130 credits, with 15 credits from core courses, and 33 credits 28 credits from electives over a 4-year. Students are also required to take a graduation exam, and demonstrate proficiency in a foreign language.

■ Professors

• Gwang-jun Kim, Ph.D.
[Professor, Computer Communication, kgj@jnu.ac.kr]

■ What Do You Study?

General Courses

General Chemistry 1 (3)
Chemistry Laboratory 1(1)
Mathematics 1 (3)
English for Global Communication (3)

Core Courses

Introduction to Industrial Convergence (3)
Basic of Computer Programming (3)
Introduction to Smart Factory (3)
P&ID Practice (3)
Capstone Design for Industrial Technology Convergence Engineering Ⅰ (3)

Electives

Digital Circuit Design (3)
Introduction to Smart Electrical and Eletronic Engineering (3)
Organic Chemistry (3)
Basic Design of Chemical Engineering(Adventure Design) (3)
Introduction to Chemical Process (3)
Petrochemical Industry (3)
Case Studies of Industrial Engineering (3)
Information & Communication Systems (3)
Chemical Safety Engineering (3)
Chemical Safety Engineering (3)
Computer Aided Design of Chemical Engineering (3)
Instrumentation Control Practice (3)
Separation and Purification Process (3)
Industry Safety Engineering (3)
Embedded System (3)
Object-Oriented Programing (3)
Process Operation Practice (3)
Design Engineering (3)
Internet of Things (3)
System Analysis & Design (3)
Quality Control (3)
Introduction to Chemical Process (3)
Production Management (3)
Energy Engineering (3)
Artficial Intelligence and Application (3)
Plant Safety Facility (3)
Filed Practice (3)
Engineering Economy (3)
Engineering Economy (3)
Factory Energy Manegement (3)
Technology and Entrepreneurship (3)
Capstone Design for Industrial Technology Convergence Engineering Ⅱ(3)
Industrial Automation Robots (3)
Product Developement Engineering (3)

■ Careers

Industrial Technology Convergence Engineering majors go on to jobs in precision chemistry, semiconductor chemistry, heavy industries, the petrochemical industry.

- Chemicals and Petroleum companies
- Steel industry company
- Electrical and semiconductor sectors
- Research Institute: Researcher at the Institute of Private Enterprises

- Government Agencies
- Korea Water Resources Corporation, Korea Environmental Corporation, National Institute of Environmental Sciences