

경 북 대 학 교

■ 주소: 대구광역시 북구 대학로 80

■ 웹사이트: <http://www.knu.ac.kr>, <http://en.knu.ac.kr>

I. 연구개발(R&D) 과정

- 전략적 첨단 산업 분야 인재 유치 및 양성을 위하여 해당 분야 연구·개발 중심의 교육과정을 운영하고, 진로·취업 연계 지원을 위한 연구기관 및 산업체 등 현장 경험 제공
- 이론과 실무를 겸비한 전문적인 인재 양성 및 순환을 통해 국가 간 교육 교류 추진
- 특히, 우리대학은 대구경북 지역을 대표하는 거점 국립대학으로 대학원혁신지원사업(Brain Korea 21 Four) 등 각종 국가 연구사업을 적극 수주하여 대학원생들이 학업과 연구에 전념할 수 있는 환경을 갖추고 있으며, 2022년도 BK21 FOUR 사업 대학원혁신 영역평가에서 국립대 중 1위 차지
- 교육 및 연구 분야에 적합한 최첨단 강의실, 세미나실, 실습실 등 구비하고 있으며, 각 분야에서 필요한 정보와 논문을 신속하게 찾을 수 있는 최고의 도서관 시스템 운영

II. R&D 과정 모집 학과

1. 모집 학과

○ 대구 캠퍼스

계열	학과(전공)	석사	박사	홈페이지 주소
자연과학	수학부	○	○	http://math.knu.ac.kr
	식품공학부(식품생물공학전공)	○	○	https://foodbiotechnology.knu.ac.kr
	식품공학부(식품응용공학전공)	○	○	https://foodae.knu.ac.kr
	임산공학과	○	○	http://wood.knu.ac.kr

○ 상주 캠퍼스

계열	학과(전공)	석사	박사	홈페이지 주소
공학	융복합시스템학과	○	○	http://cfse.knu.ac.kr

※ 상주캠퍼스는 상주시에 위치(대구에서 차량으로 약 1시간 반 거리)

2. 모집 학과 소개

1) 수학과

- 교육목표: 순수 및 응용을 아우르는 수학 인재 양성
 - 수, 도형, 함수, 공간 등에 대한 순수학문과 다양한 학문(공학, 의학, 응용과학, 경제학, 심리학 등)에 관련된 수리적 모델링의 구축과 해결을 연구

○ 학과 구성 및 현황

- 전임교원 15명, 학부생 199명, 대학원생 42명(2021년 2학기 기준)
- SW중심대학 사업 (2015~2024년)
- 4단계 BK21사업: 경북대학교 BK 수학교육연구단 (2020~2027년)

○ 교육과정

- 수학 기반의 인공지능 핵심연구 및 융합수학 연구를 위한 교육과정
- 응용수학연구팀: 수리생물연구실, 수치해석연구실, 비선형동역학연구실, 편미분방정식 연구실, 수리영상의학연구실, 데이터분석연구실
편미분방정식연구실, 수리영상의학연구실, 데이터분석연구실
- 대학원 교과과정

과목번호	과목명(국문)	과목명(영문)
APPM718	산업수학	Industrial Mathematics
APPM719	선형계획법	Linear Programming
APPM725	계산적 근사이론	Computational Approximation Theory
APPM743	산업응용통계학	Industrial Applied Statistics
APPM811	수치선형대수학	Numerical Linear Algebra
APPM813	계산대수기하학	Computational Algebraic Geometry
MATH845	과학계산 및 수치해석	Scientific Computation and Numerical Analysis
APPM934	양자계산론	Quantum Computation
MATH704	수치해석1	Numerical Analysis 1
MATH804	수치해석2	Numerical Analysis 2
MATH819	응용수학1	Applied Mathematics 1
MATH821	응용수학2	Applied Mathematics 2
MATH845	과학계산 및 수치해석	Scientific Computation and Numerical Analysis
MATH897	현장산업수학	Practical Industrial Mathematics

※ 전체 교과과정은 학과 홈페이지 참조

○ 기타

- 현재 석박사 학위논문 100% 외국어로 작성
- 대학원 245개 강좌 중 205개 영어 강좌(84%) 개설 (2013년~현재)
- 외국인 전임교수(시거스 마크 할버 교수) 재직 중

2) 식품공학부(식품생물공학전공)

○ 교육목표: 미래 식품산업 현장의 창의적·능동적 글로벌 식품공학 전문가 양성

- 전통식품산업 기술을 기반으로 미래 4차 산업혁명시대를 선도할 수 있는 융복합 식품생물산업의 발전과 세계화에 기여할 핵심 전문인력 양성

- 스마트팩토리, 스마트팜 등 자동화, 무인화, 첨단소재와 Artificial Intelligence(AI), big data, data science, 3D printing 등의 융복합화를 통한 4차 산업혁명의 시대의 핵심기술을 바탕으로 최신 스마트 식품산업의 트렌드에 부합하는 융복합인재 양성 추구

○ 학과 구성 및 현황

- 전임교원 7명, 학부생 175명, 대학원생 70명(2021년 2학기 기준)
- 산업계관점 대학평가 식품 분야 최우수학과 식품공학부 선정(2019년)

○ 교육과정

- 식품가공 및 저장: 식품생물소재 및 가공공정기술 개발, 식품물성분석을 통한 품질 최적화, 효모·프로바이오틱스 등 미생물대사물질 이용한 식품 저장 안정성 향상
- 식품 생화학 및 안전성: 천연 생리활성물질 개발, 기능성소재를 이용한 면역질환 예방 연구, 위해세균 신속검출법 및 바이오센서 개발, 병원성 미생물 제어 신기술 연구
- 식품미생물 및 생물공학: 식품품질 및 공정개발을 위한 응용연구, 식품 성분 및 소재의 생물공학적 기능연구, 고부가가치 생물소재 전환공정 및 친환경 기술 개발
- 대학원 교과과정

과목번호	과목명(국문)	과목명(영문)
ABIO0717	식품위생학특론	Advanced Food Sanitation
BIOL0964	분자미생물학특론	Topics in Molecular Microbiology
FOBI0735	식품공학특론	Advanced Food Engineering
FOIE0715	식품안전학특론	Advanced Food Safety
FOIE0735	수산 및 축산식품가공학특론	Advances in Fishery and Animal Food Processing
FOOD0724	식품화학특론	Advanced Food Chemistry
FOOD0726	식품소재화학특론	Advanced Food Material Chemistry
FOOD0753	농산식품가공학특론	Advanced Agricultural Food Processing
FOOD0761	미생물효소학특론	Advanced Microbial Enzymology
FOOD0770	식품생화학특론	Advanced Food Biochemistry
FOOD0778	미생물유전공학특강	Topics in Microbial Genetic Engineering
FOOD0779	식품단백질체학특강	Topics in Food Proteomics
FOOD0781	식품분리분석학특론	Advanced Food Isolation Analysis
FOOD0791	식품면역학특강	Topics in Food Immunology
FOOD0794	식품영양화학특론	Advanced Food Nutritional Chemistry
FOOD0795	식품디자인특론	Advanced Food Design
FOOD0796	식품위해요소중점관리특강	Topics in Hazard Analysis and Critical Control Point
FOOD0797	발효미생물생리학특론	Advanced Fermentation Microbial Physiology
FOOD0804	나노바이오기술특강	Topics in Nanobiotechnology
FOOD0805	나노바이오기술특론	Advanced Nanobiotechnology
FOOD0807	생물공정공학특론	Advanced Food Bioprocess Engineering

※ 전체 교과과정은 학과 홈페이지 참조

○ 기타

- 영어강의 장려
- 해외 전문가 초청 세미나 개최: 식품 분야 해외 전문가들과의 교류 기회 제공
- 국제저널 논문작성 능력 강화: 국제저널 논문 작성법 워크숍, 학술 DB 활용 교육 등 국제 수준의 글로벌 연구능력을 강화하기 위한 프로그램 확립
- 해외대학/연구기관과의 글로벌네트워크 확립: 미국(Univ. of Wisconsin-Madison), 일본(시즈오카대학) 등과 MOU 체결

3) 식품공학부(식품응용공학전공)

○ 교육목표: 미래 식품산업 현장의 창의적·능동적 글로벌 식품공학 전문가 양성

- 전통식품산업 기술을 기반으로 미래 4차 산업혁명시대를 선도할 수 있는 융복합 식품생물산업의 발전과 세계화에 기여할 핵심 전문인력 양성
- 스마트팩토리, 스마트팜 등 자동화, 무인화, 첨단소재와 Artificial Intelligence(AI), big data, data science, 3D printing 등의 융복합화를 통한 4차 산업혁명의 시대의 핵심기술을 바탕으로 최신 스마트 식품산업의 트렌드에 부합하는 융복합인재 양성 추구

○ 학과 구성 및 현황

- 전임교원 6명, 학부생 106명, 대학원생 22명(2021년 2학기 기준)
- 산업계관점 대학평가 식품 분야 최우수학과 식품공학부 선정(2019년)

○ 교육과정

- 바이오 헬스 분야에 부합하는 맞춤형 토탈 헬스케어 관련 전주기적 학문 교육
- 바이오 헬스케어 맞춤형 창의인재 양성을 위한 자기주도형, 실무실습, 창업기반 교육과정
- 창의성과 실무능력 및 융합적 사고능력을 갖춘 인재 양성을 위한 체계화된 커리큘럼
- 대학원 교과과정

과목번호	과목명(국문)	과목명(영문)
FOAT711	식품응용공학세미나	Food Application Engineering Seminar
FOAT712	식품응용가공학 특론	Advanced Food Application Processing
FOAT713	식품응용화학 특론	Advanced Food Application Chemistry
FOAT714	미용식품학 특론	Advanced Beauty Food Technology
FOAT715	식품가공공학 특론	Advanced Food Process Engineering
FOAT716	식품품질관리 특론	Advanced Food Quality Control
FOAT717	식품응용저장학 특론	Advanced Storage and Preservation
FOAT718	식품냉동냉장학 특론	Advanced Freezing Technology
FOAT719	식품산업미생물학 특론	Advanced Food Industrial Microbiology
FOAT720	식품응용분자생물학 특론	Advanced Food Application Molecular Biology

과목번호	과목명(국문)	과목명(영문)
FOAT721	식품응용미생물학 특론	Advanced Food Application Microbiology
FOAT722	식품응용생화학 특론	Advanced Food Application Biochemistry
FOAT723	식품응용의약학 특론	Advanced Food Application Medicine and Pharmacy
FOAT724	식품미생물대사공학	Metabolic Engineering of Industrial Microorganisms
FOAT725	최신식품안전성연구동향 특론	Recent Advances in Food Safety Research
FOAT726	식품바이오화학 특론	Bio-based Food Materials and Chemicals
FOAT727	응용시스템생물학 특론	Applied Systems Biology for Foods
FOAT728	약용식품개발특론	Advanced Medicinal Food Development
FOAT729	바이오식품 분석특론	Advanced Bio Food Analysis
FOAT730	식품응용 기기분석 특론	Advanced Food Applicable Instrumental Analysis
FOAT731	식품응용 세포생물학 특론	Advanced Food Application Cell Biology
FOOD728	식품미생물학특론	Advanced Food Microbiology
FOOD749	기능성식품학특론	Advanced Functional Food
FOOD919	식품독성학특론	Advanced Food Toxicology
FSNU739	고급식품생물공학	Advanced Food Biotechnology

※ 전체 교과과정은 학과 홈페이지 참조

○ 기타

- 특수식품, 기능성식품, 화장품, 의약품 등 식품-바이오-의약학을 융합한 식품응용 산업을 중심으로 한 커리큘럼 운영
- 대학원생 중심 소규모 융합과제 발굴 및 운영

4) 임산공학과

- 교육목표: 목재를 중심으로 산림으로부터 얻어지는 모든 생물재료 즉, 임산물의 합리적이고 효율적인 이용과 친환경적인 신소재 개발을 위한 기초 이론과 전문 지식으로 무장된 미래의 생물소재 산업의 발전에 기여할 수 있는 전문 인재 양성

○ 학과 구성 및 현황

- 전임교원 15명, 학부생 94명, 대학원생 9명(2021년 2학기 기준)
- 산림청 산림산업 첨단융합기술 전문인력 양성사업 (2019~2023년)

○ 교육과정

- 목재분야: 임산화학(탄수화물, 리그닌, 추출성분), 목재미생물학, 수목생화학, 목재조직, 목재물리 및 강도, 목재건조, 목재가공, 목구조, 목재접착제 제조공정, 목질보드 제조공정, 분석화학 등 목재의 물리, 화학, 생물학 전반에 걸친 산업 밀접형 전문 교육
- 펄프·제지분야: 특수지, 제지가공, 지류물성, 셀룰로오스 유도체, 인쇄, 치료화학, 생물제지분석, 펄프 스트림 제어, 고자재생공정 전과정평가, 일관화공정 유해

스트림 분석 등 목재의 변환 및 응용에 관한 산업 연계형 전문 교육

- 4차산업분야: 고분자재료, Bio-based 신소재, Bio 유래 스마트 센서기술 및 제어, 펄프제지기반 빅데이터 시각화, 바이오매스 변환공정, 산림산업 비즈니스, 특수지 비즈니스 모델, 산림산업공정 전략적 정책결정, Bio 신소재 밸류 프로포지션 디자인 등 4차산업 유래 바이오매스 기반 융복합 전문 교육
- 대학원 교과과정

과목번호	과목명(국문)	과목명(영문)
FPST0755	Cellulose유도체화학	Advanced Cellulose Derivatives Chemistry
FPST0757	제지학특론	Advanced Paper Making
FPST0758	인쇄학특론	Advanced Pirnting of Paper
FPST0759	목재가공학특론	Advanced Wood Technology
FPST0760	지료화학특론	Advanced Paper Chemistry
FPST0765	산림산업공정 전략적 정책결정	Strategic Analytics on Decision-Making
FPST0766	산림산업 비즈니스 모델	Business Modeling of Forest Industry
FPST0767	제지공정 유해스트림 영향인자분석	Environmental analysis in pulp and paper industry
FPST0768	특수지 비즈니스 모델	Business Modeling of Specialty
FPST0769	Bio 신소재 밸류 프로포지션 디자인	Design for Value Proposition of Bio-Advanced Materials
FPST0771	고분자재료학특론	Advanced Polymeric Material
FPST0775	목재신소재특론	Advanced New Wood Materials
FPST0781	목재문화재보존특론	Advanced Wooden Cultural Properties and Preservation
FPST0782	목구조학특론	Advanced Timber Structure
FPST0783	생물제지분석특론	Advanced Analysis of Biotechnology of Papermaking Process
FPST0784	Pulp Stream 제어 특론	Advanced Pulp Stream Control
FPST0785	고지재생공정 전과정평가특론	Advanced Total Evaluation for Recycling Process of Waste Paper
FPST0786	목재접착제 제조공정특론	Advanced Wood Adhesives Production Process
FPST0787	Bio유래 Smart 센서기술 및 제어	Biosensor and Control
FPST0788	목질환경과학특론	Advanced Woody Environment Science
FPST0789	목질보드 제조공정특론	Advanced Wood-Based Composites Manufacturing Process
FPST0790	Biomass 변환공정 타당성분석	Feasibility Analysis of Biomass Conversion Process
FPST0791	펄프제지기반 빅데이터 시각화	Big Data Visualization in Pulp and Paper Industry

※ 전체 교과과정은 학과 홈페이지 참조

○ 기타

- 첨단소재의 개발, 분석, 빅데이터화 및 비즈니스 모델링에 이르는 융복합 일관화 교육과정
- 4차산업 인재양성을 위한 맞춤형 및 산업 연계형 대학원 교과목 개설

5) 융복합시스템공학과

○ 교육목표: 에너지신산업 분야의 다학제적 학문을 수행하기 위한 융복합 전문인력 양성

○ 학과 구성 및 현황

- 4차 산업혁명 및 지능정보시대 인력양성을 목표로 2020년 9월 신설
- 전임교원 7명, 학부생 345명, 대학원생 13명(2021년 2학기 기준)
- 4단계 BK21사업: 혁신인재양성 교육연구단 선정(에너지신산업/신재생에너지)

○ 교육과정

- 에너지신산업 글로벌 인력양성 교육프로그램
 - 독일 울름응용과학기술대학 등 글로벌 역량 강화를 위한 해외 우수 연구기관과 상호교류
 - 에너지신산업 특화 지역상생 산학협력 프로그램: 17개국, 22개 기관과 협력
- 에너지신산업 분야 전문 융복합 전공 교수진
 - 에너지신산업 관련 연구 수행을 위한 다양한 전공의 공학 및 인문사회 과학 전공 교수진이 참여한 융복합전문인력 양성 교육 프로그램
 - 교육프로그램과 실무중심 연구프로그램과의 연계를 통한 실무 경쟁력 제고
- 대학원 교과과정

과목번호	과목명(국문)	과목명(영문)
CHEN0766	에너지공학특론	Advanced Energy Engineering
CLCH0712	지속가능한발전연구	Studies in Sustainable Development
CLCH0714	순환경제모델링연구	Studies in Applied circular Economic Modeling
CLCH0716	에너지시스템 분석	Analysis of Energy System
CLCH0719	에너지경제학	Energy Economics
CLCH0720	미래공학	Future Technology
CLCH0722	에너지·환경공학	Energy and Environmental Engineering
CLCH0727	에너지·환경시스템모델링	Modeling for Energy and Environment System
CLCH0728	에너지·환경통계학	Energy and Environmental Statistics
CLCH0729	국제 에너지·환경학	International Energy and Environment Science
CLCH0730	국제협상 및 관계	International Negotiation Relation
CLCH0732	국제 에너지·환경 협약	International Energy and Environment Agreement
CLCH0734	에너지정책론	Theory and Practice of Energy Environmental Policy
CLCH0811	에너지 융합연구	Energy Integration Study
CLCH0918	신재생에너지개론	Introduction to Renewable Energy
CLCH0919	신재생에너지공학 II	New and Renewable Energy Engineering II
CSFE0711	에너지 인공지능 응용 특론	Advanced AI in Energy Industry
CSFE0712	에너지 빅데이터 응용 특론	Advanced Energy Big Data Applications
CSFE0713	에너지신산업 응용 특론	Advanced Technologies in New Energy Industry
CSFE0714	스마트 에너지	Smart Energy

과목번호	과목명(국문)	과목명(영문)
CSFE0715	건물에너지 분석 및 응용 특론	Advanced Building Energy Simulation & Application
CSFE0716	에너지하베스팅	Energy Harvesting
CSFE0717	에너지저장기술	Energy Storage System

※ 전체 교과과정은 학과 홈페이지 참조

III. R&D 과정 지원

1. R&D 과정 추가 제출 서류

- 공통 제출 서류: 국립국제교육원 기준에 따름
- 추가 제출 서류: 없음
- 제출 방법
 - 모든 지원서류는 반드시 우편을 통하거나 직접 대학으로 제출
 - ※ 이메일 제출 시 지원서 접수 불가

2. 지원자 유의 사항

- 한국어능력성적(TOPIK) 3급 이상, 공인영어능력시험(TOEFL, IELTS, TOEIC 등) 고득점자 우대
- 지원자의 서류가 미비하거나 서류 내용이 부정확한 경우, 또는 원본이나 공증 사본 없이 번역본 서류만 제출한 경우에는 심사대상에서 제외함
- 지원서류에 연락처(이메일, 전화번호 등)를 잘못 기재하거나, 연락 두절로 각종 통지가 불가능하여 불합격한 경우 모든 책임은 지원자 본인에게 있음
- 제출된 지원서류는 일체 반환하지 않음

3. 문의 및 서류발송처

- 담당자: 채진복(국제교류처 국제교류과)
- Tel: +82-53-950-2433 / Fax: +82-53-950-2419 / E-mail: kgsp@knu.ac.kr

<지원서류 제출 우편주소>

(우편번호: 41566)

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경북대학교 국제교류처

Kyungpook National University

- Address: 80 Daehak-ro, Buk-gu, Daegu, 41566, Republic of KOREA
Office of International Affairs, Kyungpook National University
- Website: <http://www.knu.ac.kr>, <http://en.knu.ac.kr>

I. Overview of the R&D Program

- R&D Program aims to provide R&D-focused curriculum and field experience in research institutes and industries. In addition, the program is to attract and nurture talented scholars in the strategic high-tech industry and to be beneficial to individual's future career.
- This program is designed to promote educational exchange between nations by training and dispatching talented individuals who are equipped with theoretical and practical knowledge.
- In particular, Kyungpook National University is one of the best national universities in Korea, representing Daegu and North Gyeongsang Province. KNU has won various national research projects, such as Brain Korea 21 Four, providing an environment for graduate students to concentrate on their studies and research.
- KNU also has state-of-the-art classrooms, seminar rooms and labs suitable for education and research, and operates the best library system to quickly find the information and papers needed in each field.

II. Fields of Study

1. Academic Programs

- Daegu Campus

Division	Departments(Majors)	Master's	Doctoral	Department websites
Natural Science	Mathematics	○	○	http://math.knu.ac.kr
	Food Science & Biotechnology (Major in Food Biotechnology)	○	○	https://foodbiotechnology.knu.ac.kr
	Food Science & Biotechnology (Major in Food Application Technology)	○	○	https://foodae.knu.ac.kr
	Wood & Paper Science	○	○	http://wood.knu.ac.kr

- Sangju Campus

Division	Departments(Majors)	Master's	Doctoral	Department websites
Engineering	Convergence & Fusion System Engineering	○	○	http://cfse.knu.ac.kr

※ Sangju Campus is located in the City of Sangju (about 1 1/2 hours drive away from Daegu)

2. Department Introduction

1) Mathematics

- Educational Objective: Nurture brilliant mathematical minds to meet the demands of the times based on fundamental education

○ Department overview

- 15 full-time faculty members, 199 undergraduates, and 42 graduate students (as of fall semester, 2021)
- Participating 'Software-centered university project' (2015-2024)
- Participating 'Stage 4 BK21 Project': KNU BK Mathematics Education Research Group (2020-2027)

○ Curriculum

- Focusing on mathematics-based artificial intelligence research and convergence mathematics research
- Applied Mathematics Research Team: Mathematical Biology Laboratory, Numerical Analysis Laboratory, Nonlinear Dynamics Laboratory, Partial Differential Equation Laboratory, Laboratory for Mathematics in Medicine, and Data Analysis Laboratory
- Course information

Course code	Course name(Korean)	Course name(English)
APPM718	산업수학	Industrial Mathematics
APPM719	선형계획법	Linear Programming
APPM725	계산적 근사이론	Computational Approximation Theory
APPM743	산업응용통계학	Industrial Applied Statistics
APPM811	수치선형대수학	Numerical Linear Algebra
APPM813	계산대수기하학	Computational Algebraic Geometry
MATH845	과학계산 및 수치해석	Scientific Computation and Numerical Analysis
APPM934	양자계산론	Quantum Computation
MATH704	수치해석1	Numerical Analysis 1
MATH804	수치해석2	Numerical Analysis 2
MATH819	응용수학1	Applied Mathematics 1
MATH821	응용수학2	Applied Mathematics 2
MATH845	과학계산 및 수치해석	Scientific Computation and Numerical Analysis
MATH897	현장산업수학	Practical Industrial Mathematics

※ For the entire curriculum, please check the department website.

○ Others

- Currently, 100% of the master's and doctorate thesis is written in English.
- 205 courses(84%) out of 245 graduate courses are taught in English (2013~present).

2) Food Science & Biotechnology(Major in Food Biotechnology)

○ Educational Objective: Training creative and active global food engineering experts in the future food industries

- Based on traditional food industry technology, training professionals to contribute to the development and globalization of the food convergence industry in the 4th industrial revolution era

- Based on the core technologies of the 4th Industrial Revolution era, such as automation, unmanned technology, artificial intelligence(AI), big data, data science, and 3D printing, seeks to cultivate convergence talent that meets the latest smart food industry trends

○ Department overview

- 7 full-time faculty members, 175 undergraduates, and 70 graduate students (as of fall semester, 2021)
- Selected as 'Best Department of Food Engineering' in the Industry-Perspective University Evaluation (2019)

○ Curriculum

- Provide a curriculum that meet the needs of change in the 4th industrial era(3 areas)
- Food processing and storage: development of food biological materials and processing technologies, quality optimization through food property analysis, and improvement of food storage stability using microbial metabolites such as yeast and probiotics
- Food biochemistry and safety: development of natural physiological active substances, research on the prevention of immune diseases using functional materials, rapid detection of harmful bacteria and biosensors, and new technologies for pathogenic microorganisms
- Food microbiology and biotechnology: applied research for food quality and process development, biomedical functional research of food ingredients and materials, high value-added biological material conversion process and eco-friendly technology development
- Course information

Course code	Course name(Korean)	Course name(English)
ABIO0717	식품위생학특론	Advanced Food Sanitation
BIOL0964	분자미생물학특론	Topics in Molecular Microbiology
FOBI0735	식품공학특론	Advanced Food Engineering
FOIE0715	식품안전학특론	Advanced Food Safety
FOIE0735	수산 및 축산식품가공학특론	Advances in Fishery and Animal Food Processing
FOOD0724	식품화학특론	Advanced Food Chemistry
FOOD0726	식품소재화학특론	Advanced Food Material Chemistry
FOOD0753	농산식품가공학특론	Advanced Agricultural Food Processing
FOOD0761	미생물효소학특론	Advanced Microbial Enzymology
FOOD0770	식품생화학특론	Advanced Food Biochemistry
FOOD0778	미생물유전공학특강	Topics in Microbial Genetic Engineering
FOOD0779	식품단백질체학특강	Topics in Food Proteomics
FOOD0781	식품분리분석학특론	Advanced Food Isolation Analysis
FOOD0791	식품면역학특강	Topics in Food Immunology
FOOD0794	식품영양화학특론	Advanced Food Nutritional Chemistry
FOOD0795	식품디자인특론	Advanced Food Design

Course code	Course name(Korean)	Course name(English)
FOOD0796	식품위해요소중점관리특강	Topics in Hazard Analysis and Critical Control Point
FOOD0797	발효미생물생리학특론	Advanced Fermentation Microbial Physiology
FOOD0804	나노바이오기술특강	Topics in Nanobiotechnology
FOOD0805	나노바이오기술특론	Advanced Nanobiotechnology
FOOD0807	생물공정공학특론	Advanced Food Bioprocess Engineering

※ For the entire curriculum, please check the department website.

○ Others

- Seminars with overseas experts: opportunities for communicate with overseas experts in the food sector
- International journal thesis writing skills: provides programs to strengthen international-level global research skills, such as workshops on international journal thesis writing methods and education using academic Database
- Global network with overseas universities/research institutions: established MOUs with the United States (University of Wisconsin-Madison) and Japan (Shizuoka University)

3) Food Science & Biotechnology(Major in Food Application Technology)

○ Educational Objective: Training creative and active global food engineering experts in the future food industries

- Based on traditional food industry technology, training key professionals to contribute to the development and globalization of the food convergence industry in the era of the 4th industrial revolution
- Based on the core technologies of the 4th Industrial Revolution era, such as automation, unmanned technology, artificial intelligence(AI), big data, data science, and 3D printing, seeks to cultivate convergence talent that meets the latest smart food industry trends

○ Department overview

- 6 full-time faculty members, 106 undergraduates, and 22 graduate students (as of fall semester, 2021)
- Selected as 'Best Department of Food Engineering' in the Industry-Perspective University Evaluation (2019)

○ Curriculum

- Whole-cycle academic training related to customized total healthcare for the bio-health sector
- Self-directed, practical, and start-up-based curriculum for fostering creative talents tailored to bio-healthcare
- A systematic curriculum for fostering talents with creativity, practical skills, and convergent thinking skills
- Course information

Course code	Course name(Korean)	Course name(English)
FOAT711	식품응용공학세미나	Food Application Engineering Seminar

Course code	Course name(Korean)	Course name(English)
FOAT712	식품응용가공학 특론	Advanced Food Application Processing
FOAT713	식품응용화학 특론	Advanced Food Application Chemistry
FOAT714	미용식품학 특론	Advanced Beauty Food Technology
FOAT715	식품가공공정 특론	Advanced Food Process Engineering
FOAT716	식품품질관리 특론	Advanced Food Quality Control
FOAT717	식품응용저장학 특론	Advanced Storage and Preservation
FOAT718	식품냉동냉장학 특론	Advanced Freezing Technology
FOAT719	식품산업미생물학 특론	Advanced Food Industrial Microbiology
FOAT720	식품응용분자생물학 특론	Advanced Food Application Molecular Biology
FOAT721	식품응용미생물학 특론	Advanced Food Application Microbiology
FOAT722	식품응용생화학 특론	Advanced Food Application Biochemistry
FOAT723	식품응용의약학 특론	Advanced Food Application Medicine and Pharmacy
FOAT724	식품미생물대사공학	Metabolic Engineering of Industrial Microorganisms
FOAT725	최신식품안전성연구동향 특론	Recent Advances in Food Safety Research
FOAT726	식품바이오화학 특론	Bio-based Food Materials and Chemicals
FOAT727	응용시스템생물학 특론	Applied Systems Biology for Foods
FOAT728	약용식품개발특론	Advanced Medicinal Food Development
FOAT729	바이오식품 분석특론	Advanced Bio Food Analysis
FOAT730	식품응용 기기분석 특론	Advanced Food Applicable Instrumental Analysis
FOAT731	식품응용 세포생물학 특론	Advanced Food Application Cell Biology
FOOD728	식품미생물학특론	Advanced Food Microbiology
FOOD749	기능성식품학특론	Advanced Functional Food
FOOD919	식품독성학특론	Advanced Food Toxicology
FSNU739	고급식품생물공학	Advanced Food Biotechnology

※ For the entire curriculum, please check the department website.

○ Others

- Curriculum focusing on the food application industry that combines food-bio-pharmaceuticals such as special foods, functional foods, cosmetics, and pharmaceuticals
- Develops and operates small-scale convergence for graduate students

4) Wood & Paper Science

- Educational Objective: Training professional experts who can contribute to the development of the future biological material industry with basic theories and expertise for rational and efficient use of new eco-friendly forest materials
- Department overview
 - 15 full-time faculty members, 94 undergraduates, and 9 graduate students (as of fall semester, 2021)

- Participating Korea Forest Service's 'Experts Training in Advanced Convergence Technology in the Forest Industry' (2019-2023)

○ Curriculum

- Wood material: professional training in forestry (carbohydrate, lignin, extractive components), wood microbiology, tree biochemistry, wood tissue, wood physical and strength, wood drying, wood processing, wood adhesive manufacturing process, wood board manufacturing process, analysis chemistry, etc
- Pulp and paper: professional education on conversion and application of wood, such as special paper, paper processing, tributary properties, cellulose derivatives, printing, geochemistry, bio-paper analysis, pulp stream control, high magnetic regeneration process evaluation, and integration process harmful stream analysis
- 4th Industrial area: bio-based new material, bio-based smart sensor technology and control, pulp control based big data visualization, biomass conversion process, forest industry business, special land business model, strategic policy decision of forest industry process, Bio new material value propulsion design, etc
- Course information

Course code	Course name(Korean)	Course name(English)
FPST0755	Cellulose 유도체화학	Advanced Cellulose Derivatives Chemistry
FPST0757	제지학특론	Advanced Paper Making
FPST0758	인쇄학특론	Advanced Pirnting of Paper
FPST0759	목재가공학특론	Advanced Wood Technology
FPST0760	지료화학특론	Advanced Paper Chemistry
FPST0765	산림산업공정 전략적 정책결정	Strategic Analytics on Decision-Making
FPST0766	산림산업 비즈니스 모델	Business Modeling of Forest Industry
FPST0767	제지공정 유해스트림 영향인자분석	Environmental analysis in pulp and paper industry
FPST0768	특수지 비즈니스 모델	Business Modeling of Specialty
FPST0769	Bio 신소재 밸류 프로포지션 디자인	Design for Value Proposition of Bio-Advanced Materials
FPST0771	고분자재료학특론	Advanced Polymeric Material
FPST0775	목재신소재특론	Advanced New Wood Materials
FPST0781	목재문화재보존특론	Advanced Wooden Cultural Properties and Preservation
FPST0782	목구조학특론	Advanced Timber Structure
FPST0783	생물제지분석특론	Advanced Analysis of Biotechnology of Papermaking Process
FPST0784	Pulp Stream 제어 특론	Advanced Pulp Stream Control
FPST0785	고지재생공정 전과정평가특론	Advanced Total Evaluation for Recycling Process of Waste Paper
FPST0786	목재접착제 제조공정특론	Advanced Wood Adhesives Production Process
FPST0787	Bio유래 Smart 센서기술 및 제어	Biosensor and Control
FPST0788	목질환경과학특론	Advanced Woody Environment Science
FPST0789	목질보드 제조공정특론	Advanced Wood-Based Composites Manufacturing Process

Course code	Course name(Korean)	Course name(English)
FPST0790	Biomass 변환공정 타당성분석	Feasibility Analysis of Biomass Conversion Process
FPST0791	펄프제지기반 빅데이터 시각화	Big Data Visualization in Pulp and Paper Industry

※ For the entire curriculum, please check the department website.

○ Others

- Consistent curriculum studying from development, analysis, big data, and business modeling of advanced materials
- Customized and industry-linked graduate school courses to develop human resources in the 4th industry era

5) Convergence & Fusion System Engineering

○ Educational Objective: Training convergence professionals to carry out multidisciplinary studies in the new energy industries

○ Department overview

- Established in September 2020 with the aim of developing human resources in the era of the 4th Industrial Revolution and Intelligent era
- 7 full-time faculty members, 345 undergraduates, and 13 graduate students (as of fall semester, 2021)
- Participating 'Stage 4 BK21 Project': Innovative Talent Training Research Group (New Energy Industry/New Renewable Energy)

○ Curriculum

- Provides global human resource training program in the new energy industries
 - Interaction with excellent overseas research institutes to strengthen research capabilities such as Ulim University of Applied Sciences in Germany
 - Regional industry-academic cooperation program specialized in the new energy industries (with 22 organizations, 17 countries)
- Faculty members specializing in the new energy convergence industries
 - Education program for convergence professionals involving professors in the field of various research areas majoring in engineering, humanities, and social sciences
 - Improving practical competitiveness through linkage between educational programs and practical research programs
- Course information

Course code	Course name(Korean)	Course name(English)
CHEN0766	에너지공학특론	Advanced Energy Engineering
CLCH0712	지속가능한발전연구	Studies in Sustainable Development
CLCH0714	순환경제모델링연구	Studies in Applied circular Economic Modeling
CLCH0716	에너지시스템 분석	Analysis of Energy System
CLCH0719	에너지경제학	Energy Economics

Course code	Course name(Korean)	Course name(English)
CLCH0720	미래공학	Future Technology
CLCH0722	에너지·환경공학	Energy and Environmental Engineering
CLCH0727	에너지·환경시스템모델링	Modeling for Energy and Environment System
CLCH0728	에너지·환경통계학	Energy and Environmental Statistics
CLCH0729	국제 에너지·환경학	International Energy and Environment Science
CLCH0730	국제협상 및 관계	International Negotiation Relation
CLCH0732	국제 에너지·환경 협약	International Energy and Environment Agreement
CLCH0734	에너지정책론	Theory and Practice of Energy Environmental Policy
CLCH0811	에너지 융합연구	Energy Integration Study
CLCH0918	신재생에너지개론	Introduction to Renewable Energy
CLCH0919	신재생에너지공학 II	New and Renewable Energy Engineering II
CSFE0711	에너지 인공지능 응용 특론	Advanced AI in Energy Industry
CSFE0712	에너지 빅데이터 응용 특론	Advanced Energy Big Data Applications
CSFE0713	에너지신산업 응용 특론	Advanced Technologies in New Energy Industry
CSFE0714	스마트 에너지	Smart Energy
CSFE0715	건물에너지 분석 및 응용 특론	Advanced Building Energy Simulation & Application
CSFE0716	에너지하베스팅	Energy Harvesting
CSFE0717	에너지저장기술	Energy Storage System

※ For the entire curriculum, please check the department website.

○ Others

- Educational programs consisting of multidisciplinary faculty members related to not only new energy industrial engineering fields but also policy, economy, humanities, and social science fields
- Customized education programs for industry-academic cooperation
- Global Education Program for developing world-level researchers
- Team-teaching-based education programs to improve problem-solving skills on industrial sites

III. Admission

1. Additional materials required by each university/department

○ List of required documents: *Please refer to the NIIED's 2023 GKS-G Application Guidelines*

- All applicants must have required documents such as graduation certificates, transcripts, and family registers(or birth certificates) apostilled or authenticated by the embassy according to the NIIED's Application Guidelines.
- For documents not written in Korean or English, certified translations must be accompanied.
- Please number and label each document on the top right corner as shown in the NIIED's Application Guidelines. Bind the documents ONLY using clips or binder clips

- ※ Please DO NOT use staplers.
- Application documents received after the deadline will be excluded from screening.
- Additional Documents; None
- Submission Method
 - All application documents must be submitted by postal mail or in person.
 - ※ Submitting applications via email is not acceptable.

3. Important Notes

- Applicants with official TOPIK certificates(level 3 or higher) or scoring highly in English proficiency tests(such as TOEFL, IELTS, and TOEIC) can be given extra credits during document screening.
- If an applicant's documents are insufficient, the contents of documents are inaccurate, or if only translated documents are submitted without original or notarized copies, he or she will be excluded from the document screening.
- If an applicant fails because of incorrect contact information(such as e-mail addresses, phone numbers, etc.) in the application documents or delayed response, all responsibility lies with the applicant himself or herself.
- The primary medium of instruction is Korean. Only some courses can be taught in English, which differs from each semester or each department.
- Submitted documents will not be returned to the applicant.

6. Inquiry and application address

- Ms. Jinbok Chae (GKS Program manager)
- Tel: +82-53-950-2433 / Fax:+82-53-950-2419 / E-mail: kgsp@knu.ac.kr

<Postal Address for Application Submission>

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