

교과과정

학과명(한글, 영문): IT융합학과 (Dept. of IT Fusion Technology)

이수 구분	과목 번호	교 과 목 명		학점-이론-실습		
		국 문	영 문			
전공	29518	나노공학개론	Nano Engineering	3	3	0
전공	29519	나노소자공정 I	Nano Device Processing I	3	3	0
전공	29520	나노소자공정 II	Nano Device Processing II	3	3	0
전공	29521	나노바이오기술특강	NanoBio Technology	3	3	0
전공	29522	나노반도체공학 I	Nano-Electronic Semiconductor Devices I	3	3	0
전공	29523	나노반도체공학 II	Nano-Electronic Semiconductor Devices II	3	3	0
전공	29524	나노공학 세미나 I	Nano Technology Seminar I	3	3	0
전공	29525	나노공학 세미나 II	Nano Technology Seminar II	3	3	0
전공	29526	바이오 센서 및 계측공학	Biosensor and Instrumentation Engineering	3	3	0
전공	29527	생체전자 공학	Bioelectronics Engineering	3	3	0
전공	29528	인체 센서 네트워크	Body Sensor Networks	3	3	0
전공	29529	바이오정보통신	Bio Info-Communication	3	3	0
전공	29530	바이오 멤스	BioMEMS	3	3	0
전공	14749	의용기기특론 I	Advanced BioMedical Instrument I	3	3	0
전공	14750	의용기기특론 II	Advanced BioMedical Instrument II	3	3	0
전공	29531	유-헬스케어 세미나 I	Ubiquitous Healthcare Seminar I	3	3	0
전공	29532	유-헬스케어 세미나 II	Ubiquitous Healthcare Seminar II	3	3	0
전공	14751	바이오메트릭스	Biometrics	3	3	0
전공	14410	소프트 컴퓨팅	Soft Computing	3	3	0
전공	14752	의용영상처리	Biomedical Imaging	3	3	0

전공	14753	의용신호처리	Biomedical Signal Processing	3	3	0
전공	14754	u-IT 최신 사례 세미나 I	New u-IT Case Trends I	3	3	0
전공	14755	u-IT 최신 사례 세미나 II	New u-IT Case Trends II	3	3	0
전공	15312	IT 융합 건설기술	Construction-IT convergence Technology	3	3	0
전공	15313	바이오 포토닉스	Biophotonics	3	3	0
전공	15314	NCBI 생물학적 도구	Biotoools of NCBI	3	3	0
전공	09672	지능제어	Intelligent control	3	3	0
전공	15315	초고주파 이미징	Microwave Imaging	3	3	0
전공	15316	바이오 레이더 시스템	Bio-Radar System	3	3	0
전공	17622	기업가정신교육	Entrepreneurship Education	3	3	0

각 과목에 대한 교과개요

교 과 목 명	교 과 개 요
Nano Engineering	This lecture provides an introduction to the procedures, techniques, problems, and difficulties of nano engineering and atomic-scale design. Discusses a fundamentals of device physics, synthesis, and design of molecular processing platforms and molecular integrated circuits. Learn the fabrication technologies used for today's applications and beyond.
Nano Device Processing I, II	This lecture focuses on basic studies of phenomena and processes in NEMs and MEMs, synthesis of nano-and micro-scale devices and systems, designing components. Discusses the application and impact of these structures, devices, and systems to a variety of fields.
NanoBio Technology	This lecture provides a comprehensive review of various nanotechnologies with a view to their biomedical applications. Reviews recent advances in various nanotechnologies based on polymers, biomaterials, and metals. Discusses biomedical nanotechnology in areas such as drug and gene delivery system.
Nano-Electronic Semiconductor Devices I, II	This lecture provides a understanding of semiconductor structures on short length and short time scales for future electronic devices. Discusses a state-of-the-art overview of theoretical methods, results, and applications in the Semiconductor Nanostructures.
Nano technology Seminar I, II	Seminar and project of major topics on Nano technology
Biosensor and Instrumentation Engineering	This lecture introduces the basic principle features of biosensors, discussing the types of biological materials used and the ways in which they can be connected with a variety of transducers to create the complete biosensor. Discusses their construction and their applications in a range of fields.
Bioelectronics Engineering	This lecture introduces the basic manufacturing and fabrication processes and the current range of applications for the hybrid devices; biosensor, microarray, protein chip, cell chip, neuron chip and lab-on-a chip ; results of the emerging technologies of a bio-engineering and electronics.
Body Sensor Networks	This lecture addresses the issues of rapidly changing field of new sensing and monitoring devices for healthcare and the use of wearable/wireless and implantable sensors ; discusses the latest technological developments and clinical applications of body-sensor networks.

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Bio Info-communication	This lecture introduces the sensing and monitoring, communication devices for healthcare related to system integration, sensor miniaturization, low-power sensor interface circuitry design, wireless telemetric links and signal processing. Moreover, issues related to quality of service, security, multi-sensory data fusion, and decision support are active research topics.
BioMEMS	This lecture introduces the design and application of BioMEMS : MEMS technologies for use in biological and medical areas. Major topics : fabrication technologies using non-silicon materials that are appropriate for medical/biological analyses ; microfluidic components and sensing technologies for sample preparation, delivery, and analysis ; various applications and systems at the leading edge of BioMEMS technology in a variety of areas.
Advanced BioMedical Instrument I, II	This lecture introduce the principles, applications and design of the medical instrumentation and measurements most commonly used in hospitals. Encompassing the sensors, nanoscience, biomedical Engineering, and Instruments features the latest developments, the broadest scope of coverage, and new material on multisensor data fusion and MEMS and NEMS. It will provide varied healthcare industry applications for each type of instrument.
Ubiquitous Healthcare Seminar I, II	Seminar and project of major topics on Bio Info-communication
Biometrics	Biometrics is aimed at capturing and use of physiological or behavioral characteristics for personal identification or individual verification purposes. This lecture deals with the principles, programming, and applications regarding face recognition, speaker recognition, iris recognition, fingerprint recognition, and gait recognition.
Soft Computing	Soft computing consists of several computing paradigms, including neural networks, fuzzy set theory, approximate reasoning, and derivative-free optimization methods such as genetic algorithms and simulated annealing. This lecture provides the constituent methodologies underlying neuro-fuzzy and soft computing, an evolving branch within the scope of computational intelligence.
Biomedical Imaging	This lecture introduces basic medical imaging methods such as computed tomography(CT), magnetic resonance imaging(MRI), and positron emission tomography(PET). Topics will include but not be limited to image acquisition, segmentation, enhancement, restoration, filters, transformations and compression.

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Biomedical Signal Processing	This lecture presents the fundamentals of digital signal processing as implemented in biomedical applications. Lecture topics will include the introduction of biomedical signals, fundamentals of deterministic signal processing, and probability and random signals.
u-IT Case Trend I, II	This course aims for learning new u-IT cases and application trends in an organization and business. Therefore, students can be able to learn where u-IT and applications can be applied and how they would be commercialized through management.
Construction-IT convergence Technology	This course intends to impart knowledge on information technologies applied in construction engineering field. The Lecture deals with passive control techniques of electromagnetic waves in building, intelligent and ubiquitous systems in architectural structures, and smart construction management technologies.
Biophotonics	This lecture introduces optical approach for the application in biological and medical research field. The lecture includes various topics of optical sensing with bulk and fiber optics, optical imaging by using reflection, diffusion, interference and fluorescence, and related analysis methods.
Biotools of NCBI	This lecture introduces the utilizations of the biotools of NCBI. NCBI (National Center for Biotechnology Information) is a most popular service center in biotechnology. Students will learn the utilizations of major NCBI's biotools.
Intelligent control	This lecture deals with the intelligent control technique for nonlinear systems. The structure and learning algorithms of neural networks, and stability analysis method are studied. Finally, students learn how to design the intelligent control system for real applications.
Microwave Imaging	This lecture introduces the technique using microwave for detecting the image of the known or unknown object in remote position. Based on the advanced electromagnetism, the several imaging techniques are studied, and then, the practical applications such as cancer, leak, or human detecting are investigated.
Bio-Radar System	This lecture is intended for studying the radar, especially, for the human or animal. The basic principles of the radar are studied and then, the software and hardware for bio-radar are investigated. Finally, the practical applications are followed.
Entrepreneurship Education	This lecture is intended for studying the entrepreneurship , especially, for the economy or entrepreneurs, small businesses after graduation. The basic principles of the entrepreneurship are studied and then, the products and services, fresh applications for existing products and services are investigated. Finally, Entrepreneurship stirs up the existing economic order.